JANUARY 10, 1931

Railway Age

Founded In 1856

Nicholson Thermic
SYPHONS

of simple, durable construction, perform primary functions in the efficient operation of locomotives. They have been subjected to numerous, severe tests and the final test made recently by the University of Illinois in the laboratory of its Railway Engineering Department was the most exacting locomotive boiler test ever conducted. The Railway Engineering Department states in its bulletin:

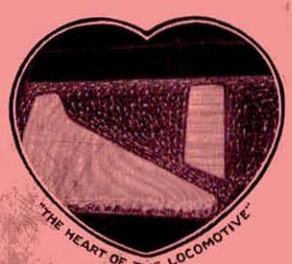
"At all rates of evaporation the Syphon-Equipped locomotive showed a definite and notable superiority over non-Syphon engine as regards both evaporation per pound of coal and boiler efficiency."

Positive protection afforded by Syphons in the prevention of boiler explosions also, has been thoroughly proven and accepted by the Boiler Inspection Department of the Interstate Commerce Commission and by leading railway officials. Bulletin No. 220 University of Illinois which is reviewed in this issue of the Railway Age will be sent upon request.

LOCOMOTIVE FIREBOX COMPANY
NEW YORK CHICAGO MONTREAL

Increased Circulation

Reduced Boiler Maintenance



Increased Economy

Unfailing Safety

GENEVA COLLEGE LIBRARY
BEAVER FALLS, PA.

Alphabetical Index to Advertisers—Page 46

Buyers Directory of Advertisers—Page 39

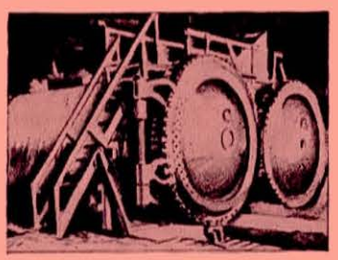
Measure your poles by the *YEAR-STICK!*

TO measure length, you'd use a yard-stick. Similarly, wise pole buyers have found a safe and all-inclusive measure of pole *value* . . . the year-stick. Poles that measure up well by the year-stick, you'll find, are poles that measure up a little better in just about every way — to be specific, International Creosoted Yellow Pine Poles.

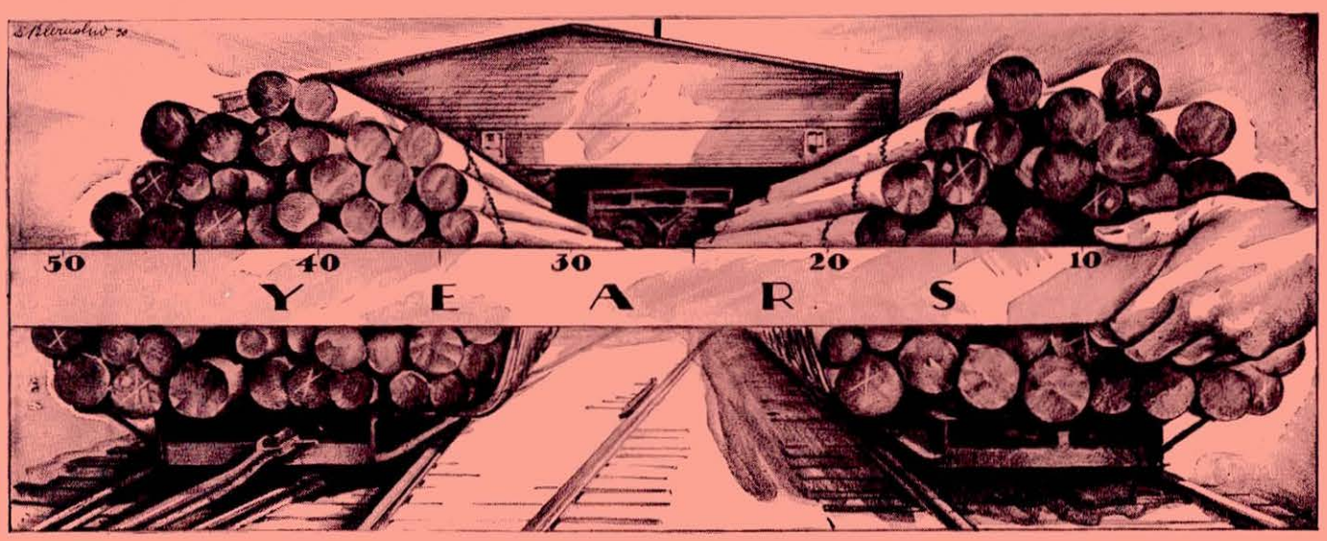
International Poles have an established life of from 35 to 40 years. Made of the strongest of pole woods, they offer greatest protection against damage. Free from decay, these poles are safer for linemen to climb. Hardware holds firmer.

And much more . . . including most important of all, the uniform high quality of product, integrity, and prompt performance associated for 50 years with the name, *International.*

Correct pressure . . the key to penetration



Every step in the application of preservative is carefully checked and re-checked. A complete system of modern indicating and recording gauges on the creosoting cylinders insures the right intensity and duration of pressure; and the right temperature. Thus the maximum penetration of the preservative is obtained. Experienced engineers supervise the whole process. Result — a protection from decay that has made International poles famous for their longer, stronger life.



International

CREOSOTING & CONSTRUCTION CO.

PRODUCERS OF CREOSOTED YELLOW PINE POLES

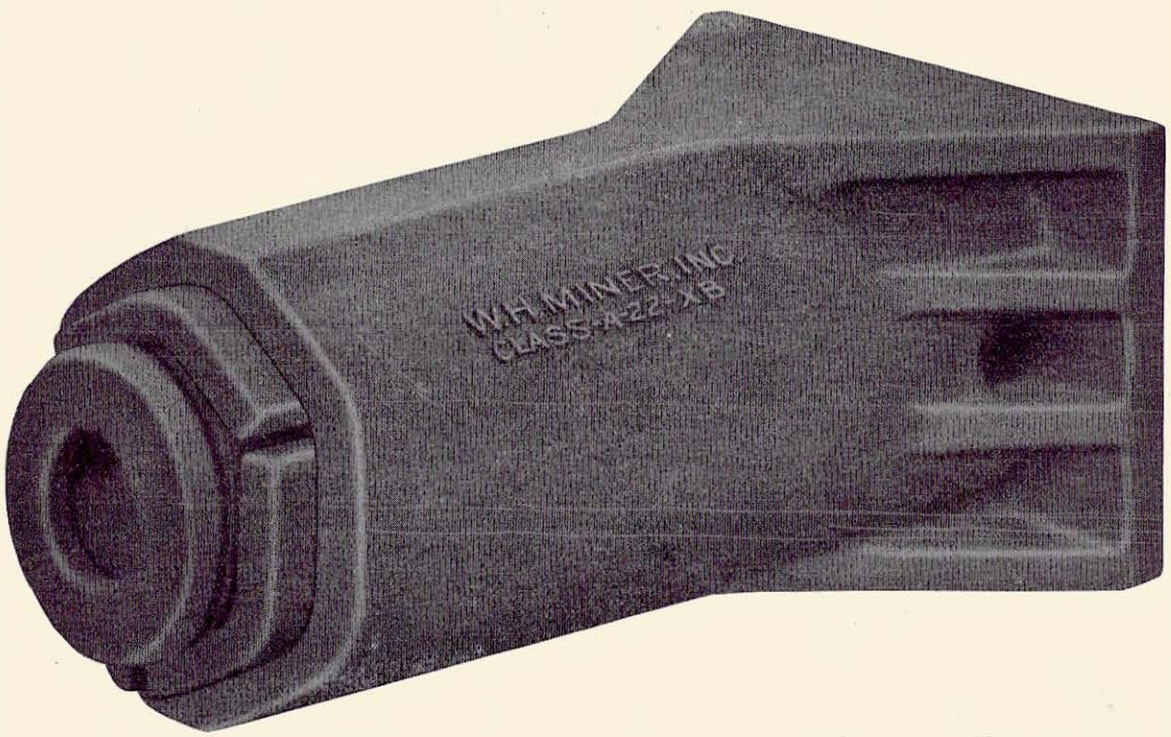
Galveston · Beaumont · Texarkana

DISTRIBUTED BY GRAYBAR

Published weekly by Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa. Entered as second class matter, March 9, 1928, at the Post Office at East Stroudsburg, Pa., under the act of March 3, 1879
Address communications to 30 Church St., New York City.

MINER

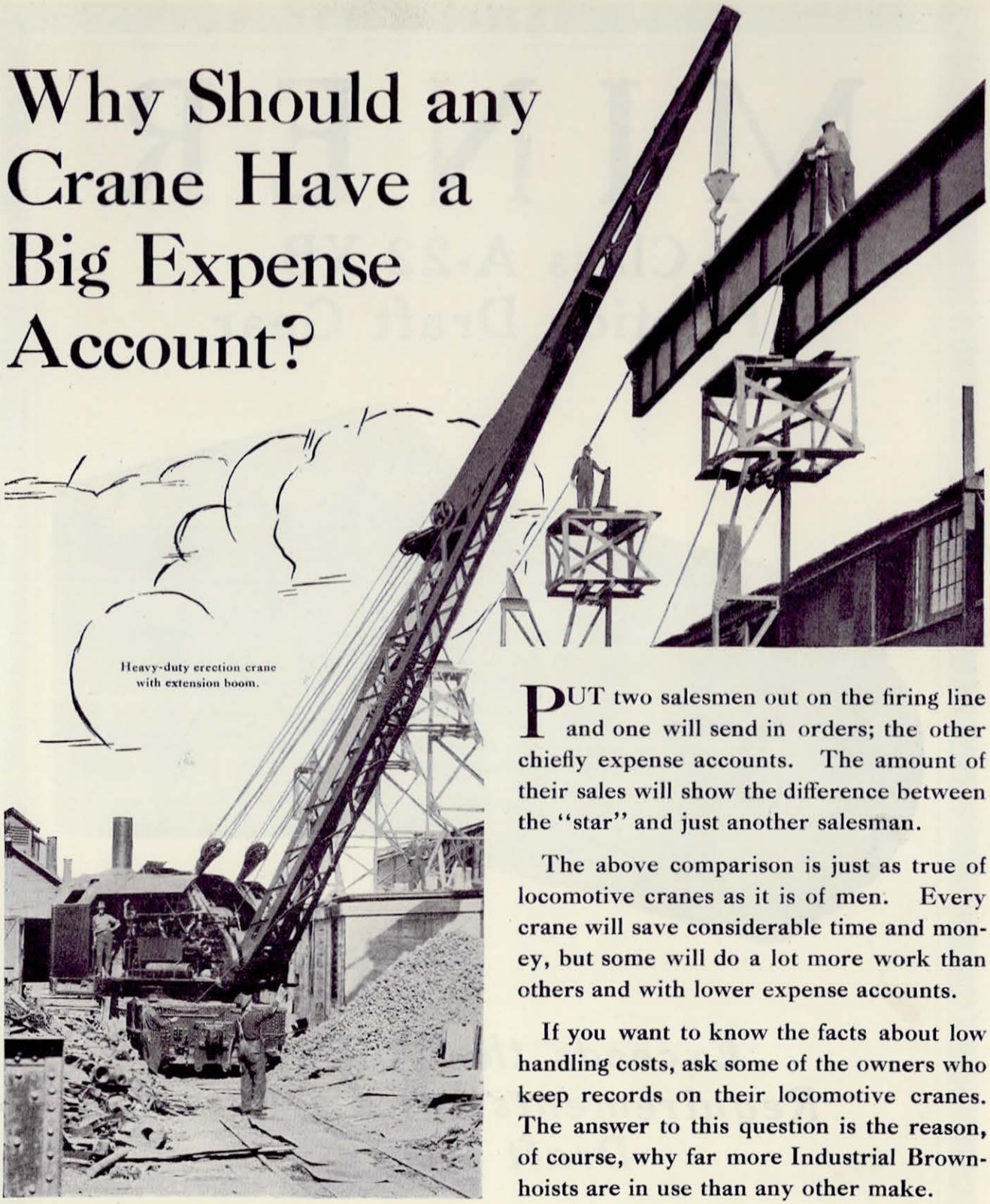
Class A-22-XB
Friction Draft Gear



Exceeds the A. R. A. Requirements for Certified Draft Gears

W. H. MINER, INC.
CHICAGO

Why Should any Crane Have a Big Expense Account?



Heavy-duty erection crane with extension boom.

PUT two salesmen out on the firing line and one will send in orders; the other chiefly expense accounts. The amount of their sales will show the difference between the "star" and just another salesman.

The above comparison is just as true of locomotive cranes as it is of men. Every crane will save considerable time and money, but some will do a lot more work than others and with lower expense accounts.

If you want to know the facts about low handling costs, ask some of the owners who keep records on their locomotive cranes. The answer to this question is the reason, of course, why far more Industrial Brownhoists are in use than any other make.

Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco, Cleveland.

Plants: Brownhoist Division, Cleveland; Industrial Division, Bay City, Michigan; Elyria Foundry Division, Elyria, Ohio.

INDUSTRIAL BROWNHOIST

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 90 January 10, 1931 No. 2

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Introduce Innovations in Burlington's Omaha Station . . Page 136

A description of this road's new passenger facilities at Omaha, Neb., provided by complete reconstruction of an old station. A club-like waiting room is the most unusual feature.

Thermic Syphons Tested at the University of Illinois 141

A report of laboratory tests at Urbana, Ill., according to which the application of syphons to a locomotive of the 2-8-2 type produced an increase of 8.47 per cent in general boiler efficiency.

Rail Executives Reach Agreement on Four System Plan in East 147

Harold F. Lane, Washington Editor, *Railway Age*, reviews the consolidation plan which executives of the N. Y. C., P. R. R., B. & O. and C. & O. have agreed, at the request of President Hoover, to submit to the Interstate Commerce Commission.

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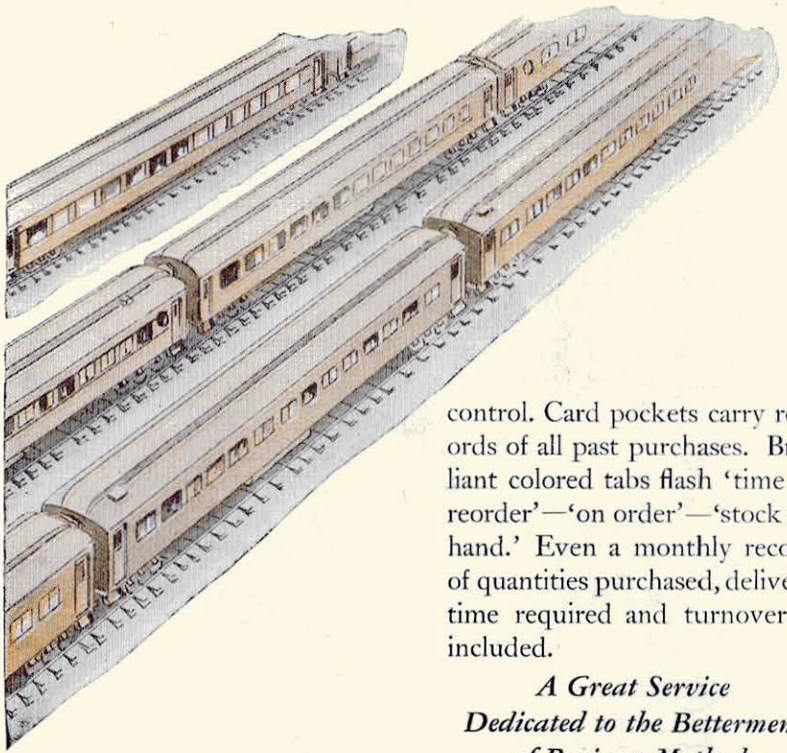
The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Low Level
Inventory
can buy You
7 COACHES



Eighteen and four-tenths per cent of the total inventory investment simply to carry stocks!

That's what it costs the average road according to A. R. A. statistics. That's what Remington Rand set out to overcome and has overcome thru Kardex Stock Control.

When you realize that, on this basis, every million dollar reduction of inventory means a direct saving of $184,000, the cost of 7 coaches, you get a picture of the possibilities Kardex presents.

Every Inventory Fact and Figure Flashed Before Your Eyes

Kardex offers you a fool-proof signalling service that flags every fact necessary to perfect stock control. Card pockets carry records of all past purchases. Brilliant colored tabs flash 'time to reorder'—'on order'—'stock on hand.' Even a monthly record of quantities purchased, delivery time required and turnover is included.

A Great Service Dedicated to the Betterment of Business Methods

Kardex Railroad Stock Control with its many advantages is only one of hundreds of system, method and machine helps that can be obtained from Remington Rand. Here, merged into one great business service organization, are the leaders in the office appliance field. Here, ready to solve your problems are 4000 widely experienced business analysts, recommending no "one best" system or device but choosing from a vast line, *the one* that best fits your particular needs.

You need interview but *one man* to benefit by the knowledge and experience of this clearing house of modern business controls. He, knowing your specialized need, may call on dozens of co-operating experts in Remington Rand offices from coast to coast to contribute their suggestions.

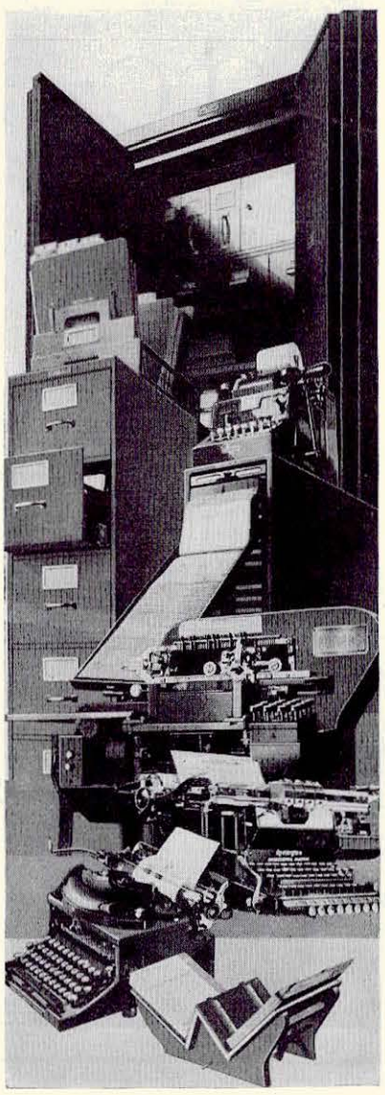
When the answer is arrived at, you may be sure that it is correct. That the installation of the recommended system or machine will solve your problem, more economically, more efficiently than any other means or method on the market. This, in a nut shell is *the basic reason for the existence of Remington Rand.*

Railroad Department

Remington Rand

BUSINESS SERVICE

BUFFALO, NEW YORK



a YEAR"

REMINGTON *Typewriters and Accounting Machines and Bookkeeping Machines* . . . SAFE-CABINET *Record Protection* . . . KALAMAZOO *and* BAKER-VAWTER *Loose Leaf Equipment* . . . RAND *and* KARDEX *Visible Records*
LIBRARY BUREAU *Filing Systems and Indexing Service*
POWERS *Accounting Machines* . . . DALTON *Adding*

Sales Offices Everywhere

a.c.f. Imperial Salon Seats
For Passenger Cars

THE genuine comfort and luxurious appearance of these modern passenger car seats will attract and retain passenger traffic for your road. This has been the experience of several of the leading railroads whose cars in main line service have been equipped with a.c.f. Imperial Salon Seats. . . . Cars equipped with these seats will assure increased patronage.

Write us for detailed description of this or any other type of passenger car seat.

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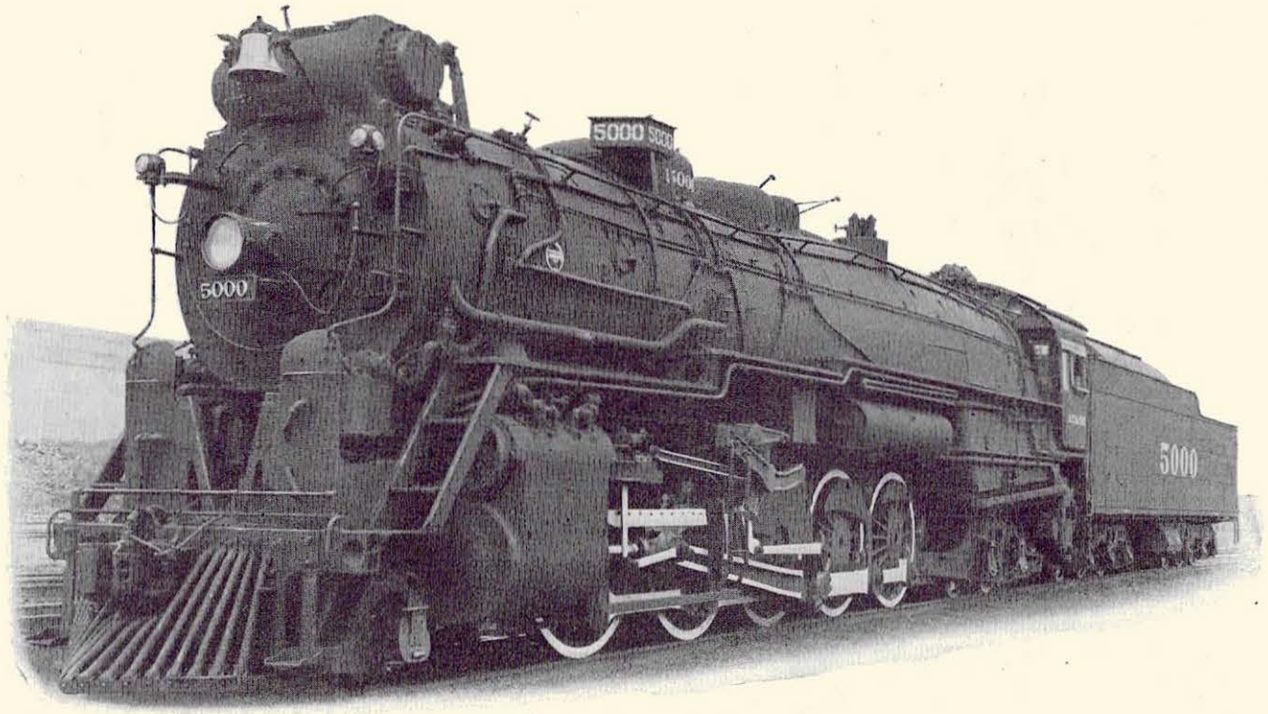
30 Church St.	Railway Exchange Bldg.	915 Olive St.



High Power 2-10-4 Type for the Santa Fe

DIMENSIONS AND WEIGHTS

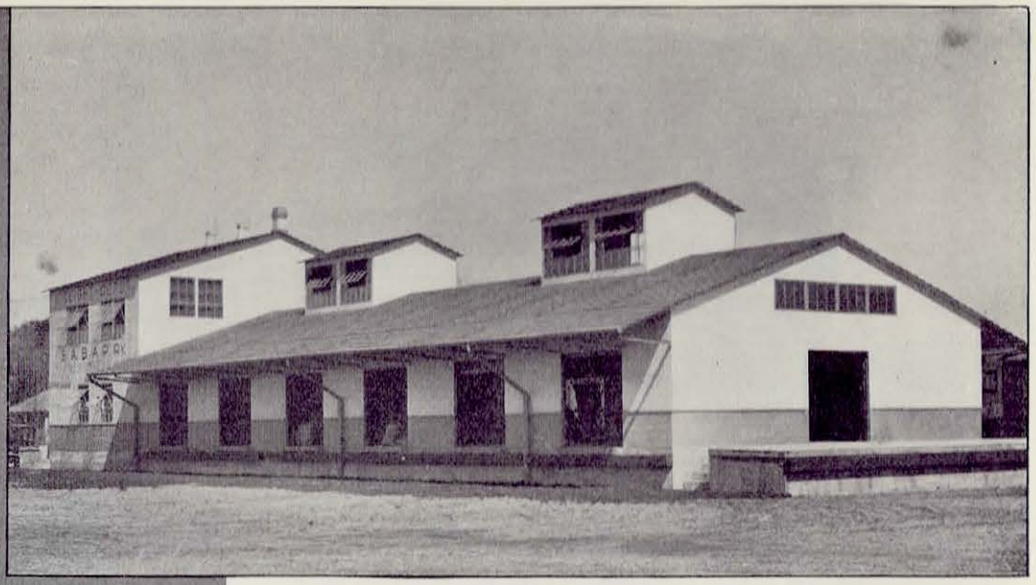
Cylinders	30″ x 34″
Drivers, diameter	69″
Steam pressure	300 lb.
Grate area	121.5 sq. ft.
Water heating surface	6114 sq. ft.
Superheating surface	2741 sq. ft.
Weight on drivers	349,910 lb.
Weight, total engine	502,260 lb.
Tractive force	93,000 lb.

ONE of the most notable locomotives recently built is shown in the above illustration—a trial engine of the 2-10-4 type, constructed for the Santa Fe System by these Works. As compared with the 2-10-2 type locomotives of the 3800 Class, which up to the present time have been the heaviest freight haulers on the road, the new locomotive presents an increase in starting tractive force of 14 per cent; in grate area of 37.5 per cent, and in combined heating surface of 34 per cent. Driving wheels 69 inches in diameter, as compared with the 63-inch wheels of the 3800 Class, give the new locomotive a marked advantage in speed capacity.

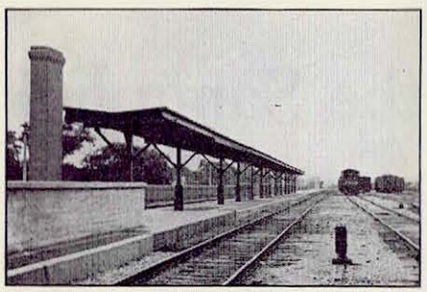
This new unit represents the characteristic features of the strictly modern locomotive—a machine of great ton-miles per hour capacity, which must eventually replace a large percentage of the power now in use if the railways are to adequately meet the transportation requirements of the future.

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA



San Antonio and Arkansas Railway Company, San Antonio, Tex. All-steel freight depot. Can be added to or dismantled and removed to new location with practically 100% salvage.



Typical of the wide range of flat rolled steel in the railroad field Butterfly canopy furnished with steel roof deck Chicago Northwestern Railroad, Mayfair Ill

Steel skids and electric lift trucks speed up handling material in and out of box cars and to and from congested shops.

What difference if changes must be made in Twenty Years?

ALL-STEEL BUILDINGS ARE NEVER OBSOLETE

ECONOMICAL expansion has determined the popularity of standardized steel buildings in the railroad field. Units can be added at will to meet increased demands, or, with no damage or trouble, steel buildings can be speedily and conveniently removed and erected on another site at little expense.

Compare this all-steel, fire-resistant construction for shops and storage buildings of all kinds, tool and bunk houses, freight houses, passenger stations, etc., with that of the so-called permanent type of construction which is not readily adaptable to addition, major alteration or removal without tremendous loss.

Railroad housing requirements are constantly changing. The way-station of today may be the freight terminal of a few years hence. Through the flexibility of standardized steel buildings, engineers are preparing to meet such unforeseen changes at small cost. They are through dynamiting buildings out of the path of progress.

We shall be glad to put you in touch with manufacturers who are capable of serving you from preliminary studies to the complete erection of the structure. Trade Research Division, National Association of Flat Rolled Steel Manufacturers, 511 Terminal Tower Building, Cleveland, Ohio.

Save Time Labor Money

***with* All Steel Buildings**

TIMKEN BEARING EQUIPPED

"Sheffield

No. 46"

solves the One-Man Car problem

Railway men have been quick to see that the recently announced "Sheffield No. 46" fills a real need. This car is easy to handle and is decidedly economical to operate. It weighs less than 400 pounds and the lifting weight with handles extended is only 100 pounds.

The "Sheffield No. 46" is exceptionally strong and rugged. Its remarkable light weight has been secured through the liberal use of heat treated aluminum alloys—as strong as steel with only one-third the weight. The powerful single-cylinder engine can be depended upon in every kind of weather and the clutch can't be burned out. True "Sheffield" quality standards are maintained throughout.

First on the rails —and still first

While the "Sheffield No. 46" is designed as a one-man car, it will accommodate two men very comfortably. Ample room for equipment is provided as a glance at the illustration will indicate. You'll be interested in complete specifications. We will send them promptly on request.

FAIRBANKS, MORSE & CO.
900 S. Wabash Ave., Chicago
32 branches at your service throughout the United States

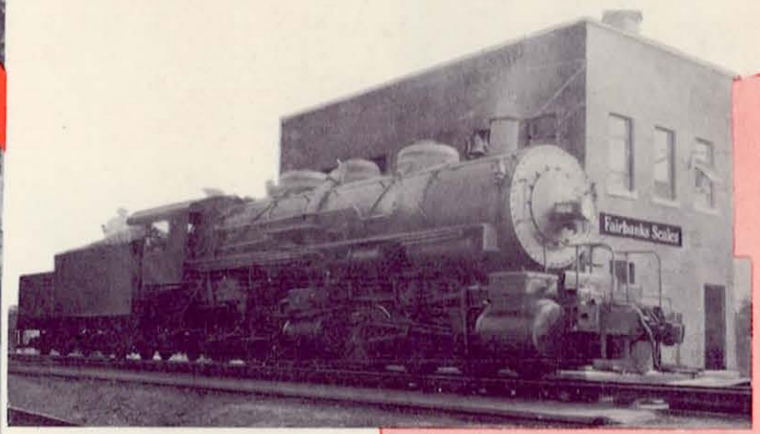
FAIRBANKS-MORSE
MOTOR CARS

F M

POWER, PUMPING AND WEIGHING EQUIPMENT

A "Saving"

That Whittles Down Your Profits



Fairbanks Heavy Capacity Plate Fulcrum Railroad Track Scale with a locomotive on platform. No dead rails are required

IT is not safe to assume that you are "saving" the cost of modern scales by continuing to use obsolete weighing equipment.

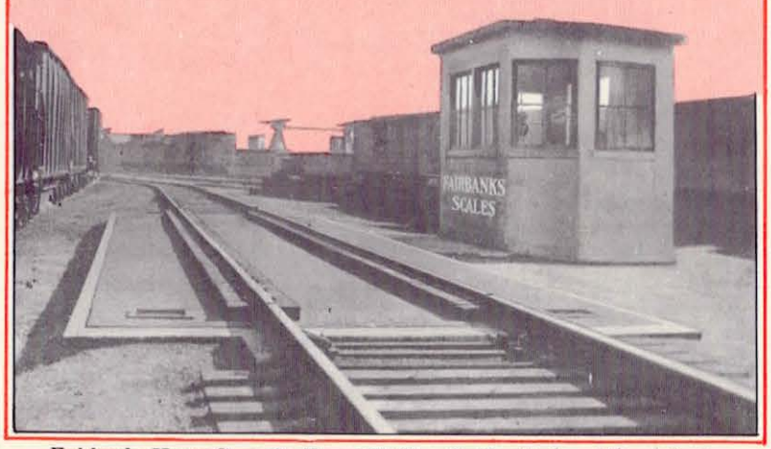
The past few years have seen marked changes in rolling stock. Today's cars are heavier, longer. Old-type scales weren't built to stand the strain of switching and weighing these big cars. Over 4000 tests prove that most old-type scales are inaccurate, the majority of them weighing "light."

Inaccuracies in carload weights directly affect your profits. Revenue is cut down. Adjustment of claims is expensive. Goodwill—a most important asset—is jeopardized. Over a period of time, the losses attributable to the inaccuracies of obsolete scales are greater than the cost of replacing the old scales with an up-to-date installation that will meet modern requirements.

Look the railway scale problem squarely in the face. Be sure that a false idea of "saving" is not robbing you of profits. Get the facts about Fairbanks Plate Fulcrum and Type "S" Track Scales. Let an F-M engineer explain how these Fairbanks Scales, *built to handle heavy loads*, will protect your profits. A century of scale building experience is at your disposal.

FAIRBANKS, MORSE & CO., Chicago

And 40 principal cities—a service station at each house



Fairbanks Heavy Capacity Type "S" Two-Section Railroad Track Scale. Notice the absence of dead rails

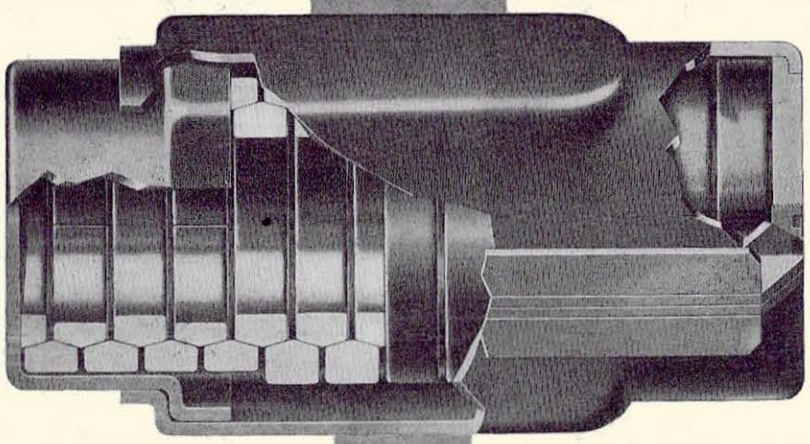
FAIRBANKS SCALES

Preferred the World Over

RSA21.7

POWER, PUMPING AND WEIGHING EQUIPMENT

EDGEWATER



RING SPRING DRAFT GEAR

The illustration at the bottom shows the principle of the Edgewater Draft Gear—simple—but positively reliable—a draft gear that will not fail to give that protection for which it is intended.

"Equipment PROTECTION *not heretofore possible"*

Edgewater Steel Co.

PITTSBURGH, PA.

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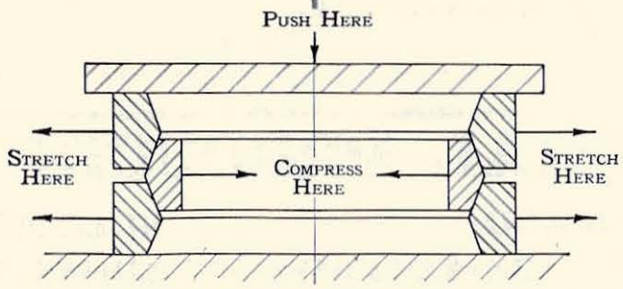
Philadelphia, Pa., Liberty Bldg.	Washington, D. C....Munsey Bldg.
New York, N.Y.....Grand Central Terminal	



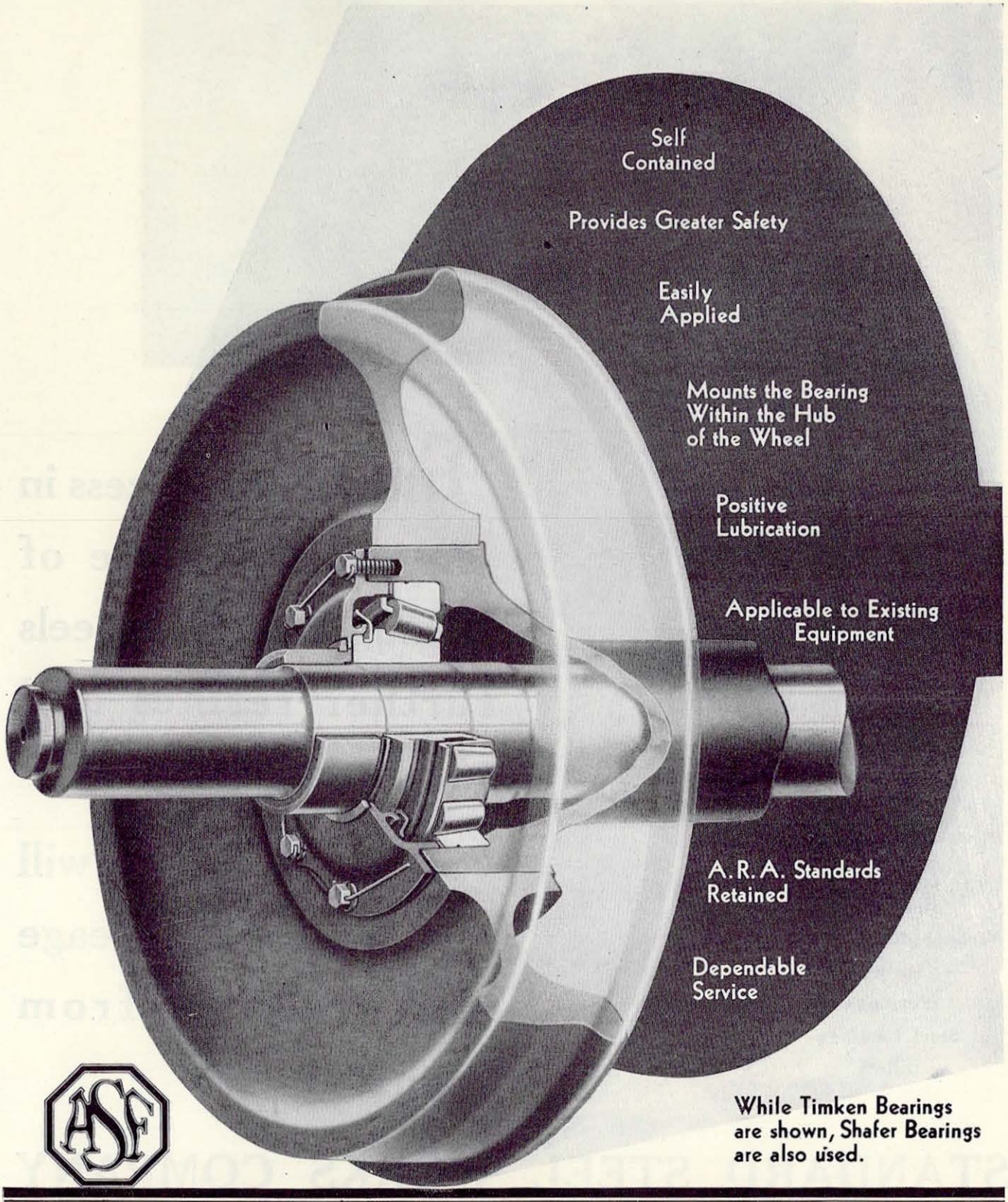
PRINCIPLE OF THE RING SPRING

DOOR operating gear is frequently damaged by bent or broken flat-plate doors. AJAX Doors being more than 100% stiffer than flat plates, give assurance of longer life to the dumping mechanism.

UNION METAL PRODUCTS COMPANY

NEW YORK · CHICAGO · ST. LOUIS · WASHINGTON
RICHMOND · HOUSTON · SAN FRANCISCO · KANSAS CITY · MONTREAL

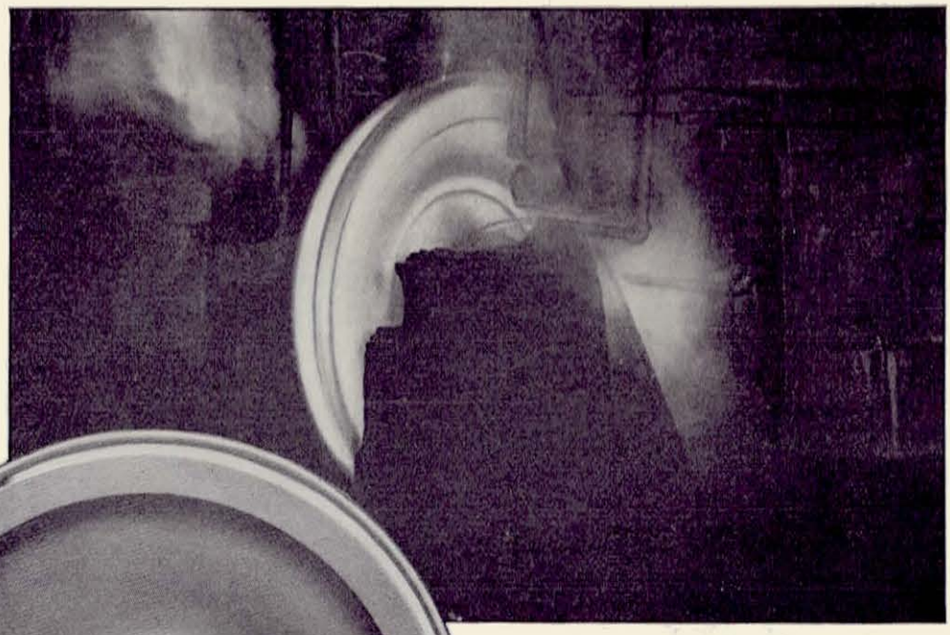
American Steel Foundries Roller Bearing Unit

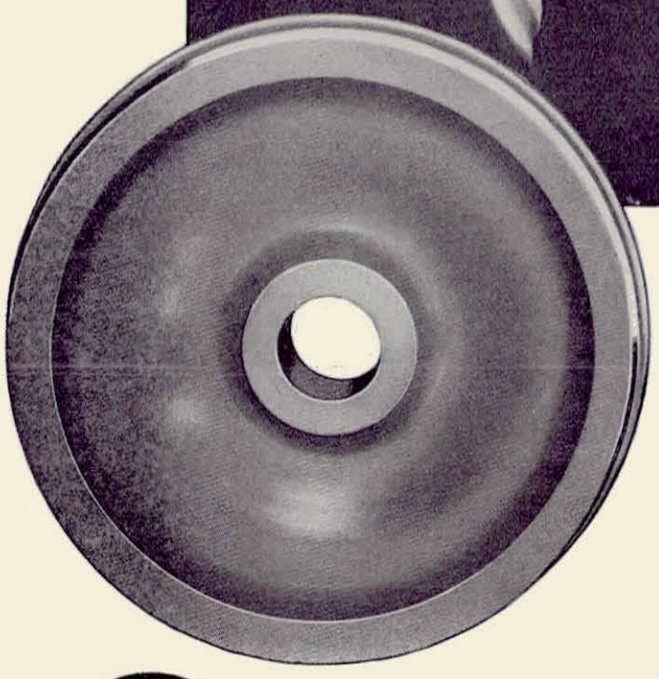


While Timken Bearings are shown, Shafer Bearings are also used.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS





THE rolling process in the manufacture of Wrought Steel Wheels further refines and toughens the metal.

"Standard" wheels will give increased mileage and freedom from trouble.

Steel Tires
Wrought Steel Wheels
Springs
Forgings
Steel Castings
Billets

STANDARD STEEL WORKS COMPANY

GENERAL OFFICES & WORKS: BURNHAM, PENNA.

CHICAGO
NEW YORK

ST. LOUIS
RICHMOND
PHILADELPHIA

PORTLAND
SAN FRANCISCO

"Time to Eat, Joe!"

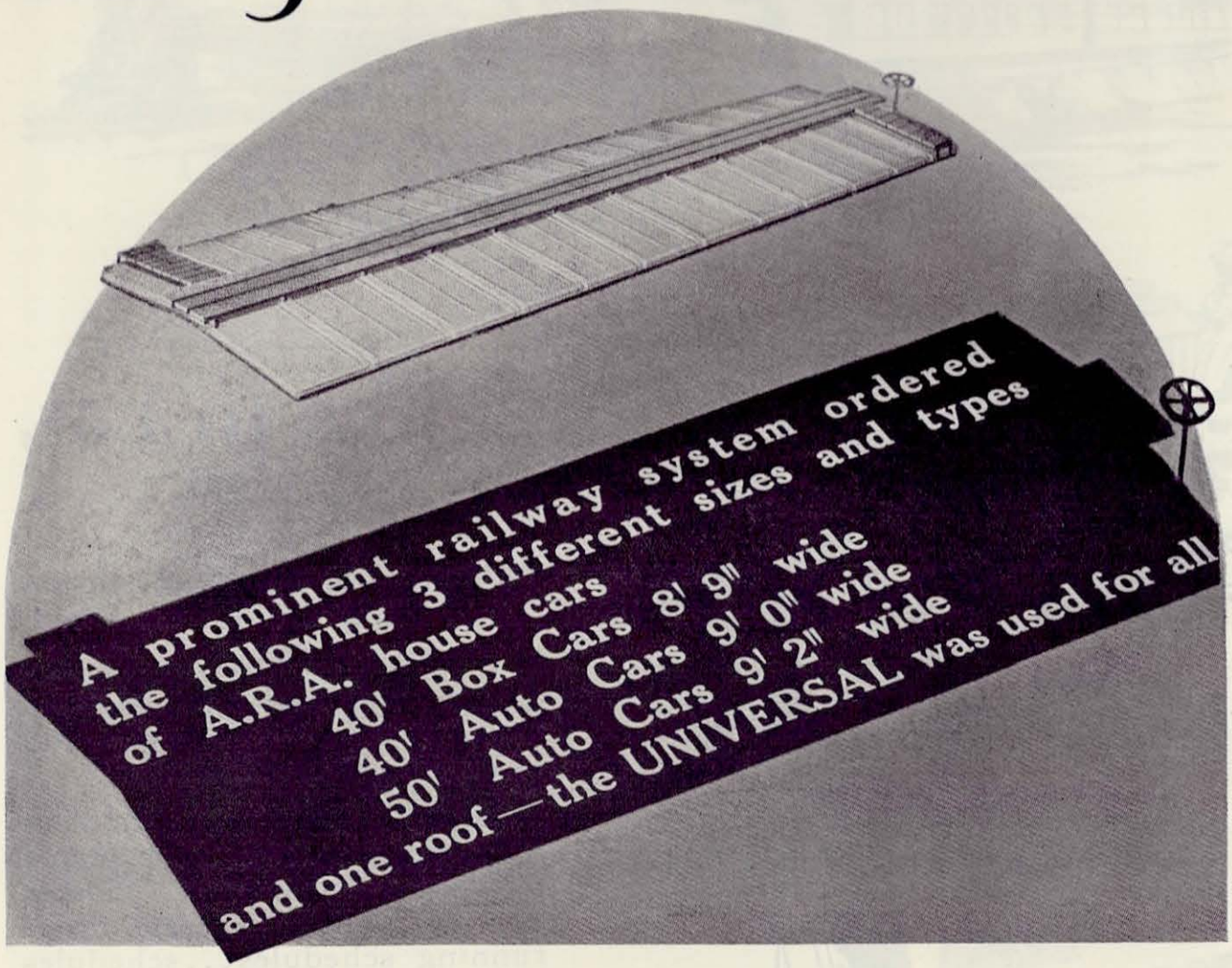
No need to look at their watches —they know it's 11-30. Fifteen is always on time!

Timken Bearings have given a new interpretation of punctuality to modern train service.

In famous transcontinental limiteds and in crack trains plying over shorter distances, "Timken Bearing Equipped" means faster running schedules . . . schedules freed from hot-box delays and lubrication troubles . . . smoother running—greater riding comfort for passengers . . . while car life is lengthened and maintenance costs cut to the bone by the exclusive radial-thrust load ability of Timken tapered construction and Timken-made steel. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN
Tapered
ROLLER BEARINGS

The UNIVERSAL ROOFED
THESE 3 DIFFERENT SIZES OF CARS


A prominent railway system ordered
the following 3 different sizes and types
of A.R.A. house cars
40' Box Cars 8' 9" wide
40' Auto Cars 9' 0" wide
50' Auto Cars 9' 2" wide
and one roof—the UNIVERSAL was used for all

This is only one of a thousand different reasons why the Universal Roof is the outstanding improvement in car construction history.

THE Universal Roof was the logical selection for it meant only one roof for the three different sizes of cars. Otherwise it would have required three, six or nine different roofs. You can readily see how much simpler and how less expensive it is to stock parts for one roof than for three, six or nine.

The Universal Roof is the only roof that has one size and one design parts that are capable of fitting any design or size house car on standard gauge tracks. The longer cars merely take a greater number of parts.

HUTCHINS CAR ROOFING COMPANY
DETROIT MICHIGAN
Established 1880

How Make Competition Equal?

The railways have long objected to the restrictive regulation and high taxes imposed upon them. They are now asking that restrictive regulation and higher taxes shall be imposed upon their competitors. There is a seeming inconsistency in their attitude which is receiving criticism from some sources.

"Bus Transportation" misrepresents the "declaration of policy" of the Association of Railway Executives with singular mendacity, as follows: "These plans are inspired purely by self-interest. They have been conceived for the purpose of stirring up agitation against bus and truck operators in an effort to increase rail revenues through strangulation and elimination of the new forms of transportation. It matters not whether the highway service is in the public interest so long as the railways are permitted to operate unhampered by competition." "Bus Transportation" adds, "Over-regulation has contributed in a major way to the difficulties of railway operation and to higher operating costs. * * * Knowing this, it seems inconsistent and short-sighted for the railway executives as a group to sponsor a plea for more regulation and higher taxation of the newer methods of transportation."

Other publications have, in a more friendly spirit, expressed themselves as favoring less regulation of railways rather than more regulation of other means of transportation. "Railroad men are justified in their opposition to present regulations restricting them," says the "Chicago Tribune." "The remedy does not lie in imposing similarly deadening regulation on competitors, but in freeing the railroads."

Shall Rate Regulation Be Abolished?

The railroads demand equal treatment and equality of opportunity with other means of transportation. As means to these ends they ask that competing means of transportation be treated by the state and national governments as the railways are. Theoretically, equality of treatment and opportunity could be established by reversing the process, and treating the railways as other means of transportation are. Do those who suggest that the railways should be treated as their competitors are, realize all they are proposing? Let us envisage just a few of the important changes that would have to be made to carry out this policy.

Carriers by highway and water make their own rates, are not required to publish and maintain them, and are permitted to practice every form of discrimination in rate making as between different shippers and communities. To give the railways the same freedom would be to authorize them to make their rates whatever the traffic would bear, to earn the largest return they could, to meet highway and waterway competition by charging lower rates for longer than for shorter hauls, wherever they saw fit, and to practice every form of discrimination between shippers and communities that would get them traffic. Do those who say they would prefer to see the railways treated as other forms of transportation are treated really mean that they want to see complete freedom to make their rates restored to the railways? If not, what do they mean?

Carriers are allowed to operate upon our inland waterways without paying for their use, the result being that the taxpayers who improve and maintain the waterways pay about one-half of the total cost of transportation upon them. Buses and trucks in most parts of the country pay the public less for the use of the highways than their use of them costs the public. To treat the railways similarly would be to vote them money from the treasuries of the national and state governments with which partly or wholly to pay interest upon the investment in their highways and the cost of maintaining them. Do those who say they would prefer to have the railways treated as other means of transportation are, rather than other means of transportation treated as the railways are, really favor taxing the public to defray a large part of the cost of railroad transportation? If not, what do they mean?

Wages of Railways and Other Carriers

There is no law regulating directly or indirectly the wages and working conditions of employees of carriers by water and highway, and they receive lower wages and work longer hours than railway employees. To treat the railways as competing carriers are treated

would involve repealing the Adamson eight hour act and the Railway Labor Act and leaving the railways entirely free to try to force upon their employees longer working hours and lower wages, and to fight out with them, free from all government intervention, and regardless of the effects upon the country's transportation, any differences that might in consequence arise. Do those who say they prefer that railways shall be treated as other means of transportation are, really wish to see their theory applied in the settlement of railway employees' wages and working conditions?

Carriers competing with the railways do their financing and issue their securities with entire freedom from government interference. Do those who say they would prefer that the railways should be treated as other means of transportation are, mean that they would like to see abolished all government regulation of the issuance of railway securities?

Perhaps there is an inconsistency in the railways complaining about the kind of treatment they receive and at the same time advocating similar treatment of other means of transportation. But are those who criticize this inconsistency willing to be consistent themselves and advocate the abolition of government regulation of railway rates, the subsidizing of the railways at the cost of the taxpayers, the abolition of all government intervention in railway labor disputes and the abolition of government regulation of railway financing and accounting? Do they really believe, whether they are willing to be consistent or not, that there is the remotest chance of the American people favoring, or of Congress and the state legislatures adopting, legislation for these purposes? A proposal from the railway executives that the national and state governments should begin to treat the railways as other means of transportation are now treated would have been greeted with universal derision and denunciation as soon as all that it involved became understood.

There is no sincerity in the suggestion that the railways should ask for less regulation and taxation for themselves instead of more regulation and taxation for others when it is made by persons interested in other means of transportation. Persons not interested in other means of transportation who sincerely advocate freeing the railways as a means of establishing equality of opportunity in transportation do so apparently without considering what freeing the railways would mean and the utter impracticability of accomplishing it.

A Condition, Not a Theory

As a matter of principle the *Railway Age* is in favor of less government in all business. But it is a condition, not a theory, that confronts us. The government actually is already in the transportation business, and is applying every kind of restrictive regulation to the railways with one hand, while passing out subsidies to the unregulated competitors of the railways with the other hand. As long as there is no public sentiment whatever in favor of reducing, much less abolishing, the regulation of railways, it is idle to suggest that the situation should be remedied by treating the railways as their competitors are treated. The only alternative by which fair play and equality of opportunity can be established is to quit subsidizing and begin effectively regulating other means of transportation.

The railways incur much less danger of arousing public sentiment against themselves by advocating this policy than they would by asking for subsidies and a reduction of the regulation applied to themselves. The public, in its present state of mind, is much more disposed to listen to arguments for a change in the treatment being accorded to the competitors of the railways than to listen to arguments for a change in the treatment being accorded to the railways themselves. Of course, it would be too bad, after all the years the railways have suffered from restrictive regulation, if other means of transportation should be subjected to the same kind of treatment; but surely other means of transportation should be able to stand the kind of treatment that shippers, the general public and public men have so long regarded as fair to the railways and highly beneficial to all concerned.

The Railroads' Interest in the Coal Trade

From coal shipped by rail, the railways derive almost as much revenue as do the mine operators who produce it. Their capital investment in coal handling facilities and equipment per ton of coal mined is much greater than that of the coal operators. Clearly, then, the railroads have quite as much at stake in the future of the coal trade as have the coal operators themselves.

Railroad coal traffic has many competitors—natural gas, oil moved by pipe lines and hydro-electric power. These competitors in many locations have economic advantages over coal and, where this is true, the only honest policy is to concede them the field. But there is reason to believe that by skilful merchandising which the coal industry has not yet succeeded in emulating, these competitors have in some cases extended themselves into fields where a full understanding of the underlying economics would have favored coal. Coal has not had as many outspoken champions as its competitors nor have they been so well organized. Until it secures such champions and until they organize their efforts intelligently, the likelihood is that coal may lose its position in many situations where, if its merits were adequately understood, it would successfully hold its own.

The matter might be left to the working out of fundamental economic laws which in the long run must always decide the issue between competitors. Unfortunately, however, by far the greater cost in-

volved in coal's competitors is a capital cost—operating costs are very low. Once a hydro-electric plant is built or a pipe line laid down, its use will continue as long as the product can be sold at a price to cover operating expenses which, as stated above, are comparatively low. With coal, on the other hand, the principal expense is an operating expense, the capital investment necessary in supplying it being very low when compared with gas or hydro-electric power.

The time to consider the comparative economies of various fuels, therefore, is before capital investments are made. Railroad men who are interested in maintaining their coal traffic will do well to bring light to bear on this problem in its initial stages. Is a gas line or a hydro-electric plant proposed in your territory? Then what is its economic justification and should not those who are promoting and financing the project have the merits of coal properly presented to them, before they have irretrievably invested in the plant to utilize competitive fuels? The coal industry can gain nothing from misleading propaganda and should not expect to. But it ought at least to have its merits known and not be ousted without a hearing. If all those who have an interest in the success of this industry should endeavor to publicize its merits, there would be no need for serious concern about its future.

Training Trainmasters

As a general rule, railways depend largely upon their trainmasters for their supply of executive timber in the operating department. It is important, therefore, that these officers have proper training, not only for their own jobs, but for the positions which they may be called upon to fill later.

The duties of a trainmaster are such as to require an intimate knowledge of the district which he supervises. It is on him that the superintendent must rely for detailed supervision. However, his knowledge of the railroad should not be confined to his own particular district, and he should have the opportunity to learn something of the railroad as a whole. This should be done not only with a view to the trainmaster's eventual promotion, but for his immediate needs as well. Railways are now being operated more largely than ever before on a system basis, the convenience of a district or a division being subordinated to the efficiency of the entire operating plan, and no trainmaster may properly be termed efficient unless he has some realization of what his actions may mean on other districts and other divisions.

Those roads that hold periodical superintendents' meetings might well find it advisable to have a trainmaster or two in attendance from time to time. The superintendents may, of course, pass on to their subordinate officers any instructions received, but an alert trainmaster can obtain considerable benefit by sitting in on at least one occasion and learning how these instructions are arrived at. The desirability of trainmasters having a wide acquaintance among shippers has, of course, long been recognized, but their value as contact men in this respect may be increased if their knowledge of the railroad exceeds purely local affairs.

The increasing membership and attendance of trainmasters at the Superintendents' Association indicates some progress in the proper direction, and the schedule of committee subjects for the coming convention indicates a desire on the part of that body to aid them, since many of the reports will cover subjects of particular interest to the trainmasters.

A Good Time to Build

To the railway engineer who has contended with rising construction costs and who has, as a result, been confronted for so many years with the frequently recurring necessity of explaining to his management why his final figures have so generally exceeded his estimates, the present situation affords welcome relief. As a matter of fact, conditions have changed so radically of late that it has not been unusual for contracts to be let for as much as 20 per cent below the estimates. This is an indication of the extent to which construction costs have fallen in recent months.

To those railways which have in mind for immediate or even for remote consideration improvement projects of any magnitude, the present conditions in the construction industry afford tempting possibilities. Owing to the general decline in such activities, materials can now be bought at prices considerably below those prevailing at any time in the last 10 or 15 years. Furthermore, delivery can be secured at the time desired with no fear of interruptions in the construction program due to delays in receipt of the required materials.

Of equal or greater importance, the railway or contractor can now secure his pick of labor. Not only can he hire men of a much higher grade than are generally available for much railway work, but such men apply themselves far more diligently than usual. In labor alone some roads have found an increase in efficiency and in output, as compared with two or three years ago, of as much as 30 per cent.

With money for capital expenditures available at low rates, and with the cost of work so far below that of the recent past, and also below that which may be expected when conditions return to normal, railway managements can afford seriously to consider the advisability of taking advantage of the present situation to secure needed improvements at minimum cost. The conditions which prevail now will not continue long, a matter which it is well to bear in mind when planning the season's program of work.

Main Waiting Room of the New Burlington Station

Introduce Innovations in

BURLINGTON'S OMAHA STATION

Old facilities in use since 1898 were reconstructed to produce an entirely modern terminal

COMFORTABLE living room furnishings have become rather common features of women's rest rooms in the better passenger stations. But it has remained for the Chicago, Burlington & Quincy to set an outstanding precedent in passenger station appointments in its recently completed terminal at Omaha, Neb. Instead of formal rows of conventional benches, the main waiting room has been furnished with overstuffed easy chairs and divans covered with leather in attractive colors, well built hardwood tables, and rugs, giving the room much of the aspect of a club lounge and affording the waiting passengers a degree of comfort and restful ease not previously to be had in railway stations.

The attractive furnishings of an unusually handsome waiting room are, however, but an incident in a station project that embodies many features that are distinctly out of the ordinary. The station comprises one unit of an ingenious paired station alternative for a union station. It serves as an example of what may be accomplished by rebuilding an old station. But what seemed entirely unwarranted to the superficial observer, it entailed the complete recasting of the exterior of a building of exceptional beauty for no apparent purpose other than to give it a more attractive architectural treatment, to meet the views of the people of Omaha and to retain the station in its present location. And as will be clear from the following exposition, these features all comprise essential elements of a decidedly unique project which has given the Burlington the equivalent of an entirely new passenger terminal, at a fraction of the cost of a new one.

Two Stations at Omaha

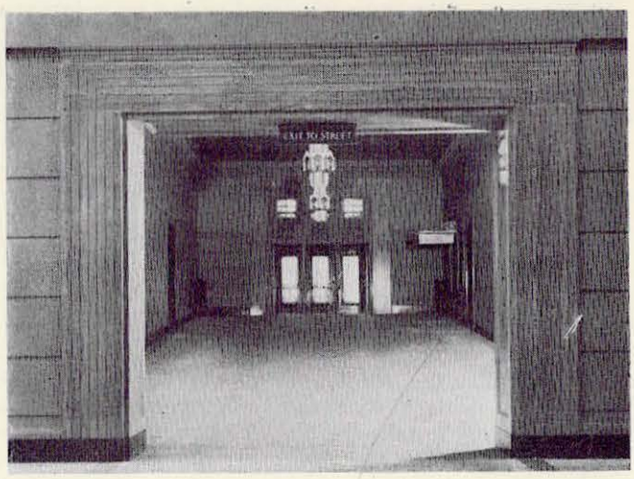
For many years the railways entering Omaha have been served by two stations, owned respectively by the Burlington and the Union Pacific, and located only about 100 yds. apart with frontage on the east side of Tenth street. Both stations were of the through type, served by tracks which occupied practically the entire space between the two buildings, and although the grade of Tenth street is separated from that of the tracks over which the street is carried on a viaduct, and both stations were two-story structures having entrances at the level of the viaduct, the station facilities in each case were essentially of the single-level type, with train gates on the track level.

Because of the inherent disadvantage of this arrange-

ment for multi-track stations, aggravated by the increasing length of trains, it became apparent several years ago that more modern facilities were needed. And, as has always been the case in the local consideration of such projects, there was a popular demand for a "Union" station. There were, however, a number of reasons why this proposal did not meet with favor with the Burlington management. Foremost among these was the fact that the existing Burlington station was a well-built structure, erected in 1898, and of adequate size to meet the present demands. Furthermore, unlike the Union Pacific station, a large part of the passenger accommodations were already housed on the upper level, thereby faciliating the change to two-level operation. Another reason is to be found in the distinct difference between the character of the service rendered by the two stations. Whereas the Union Pacific station is primarily a terminal point for all the roads using it, providing for the necessary interchange of passengers between the Union Pacific entering from the west and five roads whose lines approach from east and south, the Burlington station is essentially a through station where few passengers change to other roads.

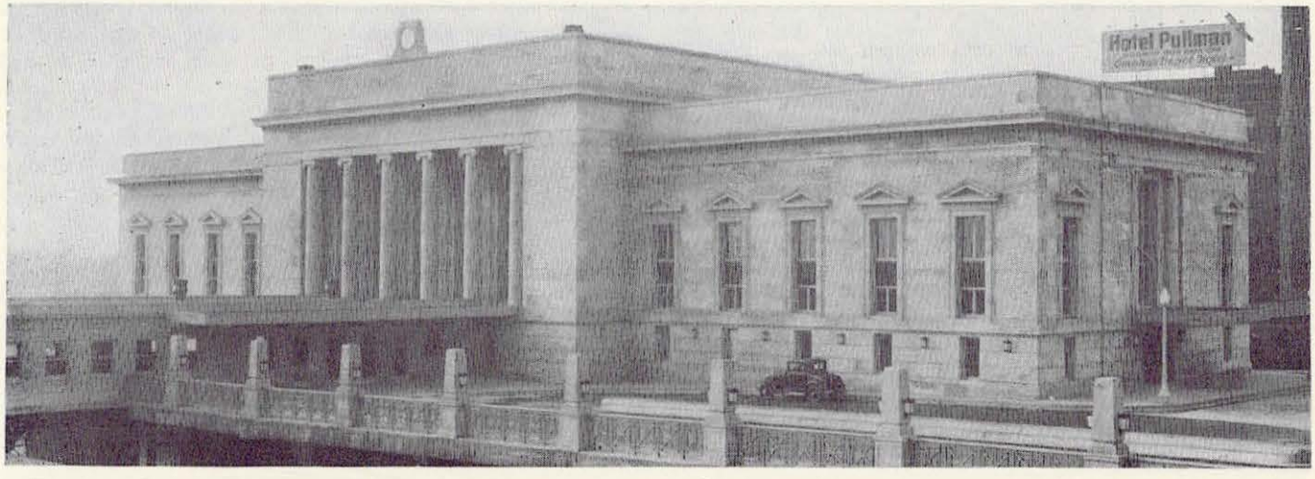
Two Independent Projects

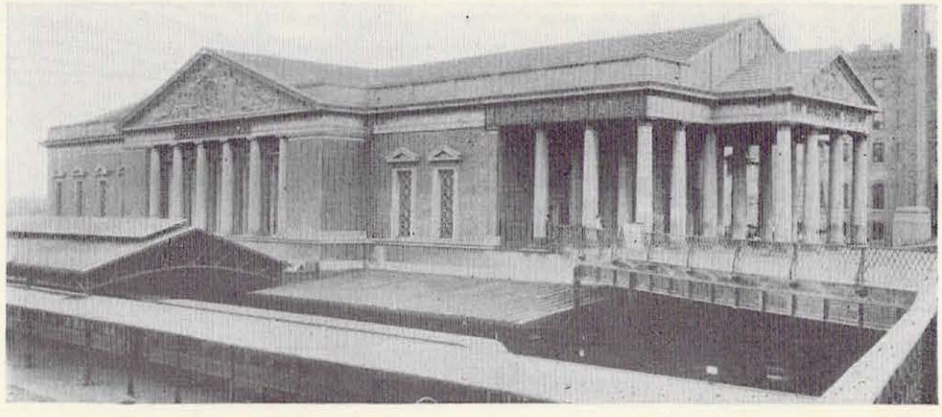
For these reasons the two owning roads proceeded with independent projects that provided for two-level stations, the Union Pacific to build an entirely new station and the Burlington to rebuild its structure. However, to afford convenient interchange of passengers, the plans for the two projects were co-ordinated so that the train concourses extending out over the platforms of each station, were joined at their outer ends. Except for this and certain changes in the track layouts, the two projects were essentially independent.



Looking up the West Ramp Lobby Towards the Tenth Street Entrance

The old Burlington station was a symmetrical structure of classic proportions and details of which the distinctive feature was a portico entrance facing on Tenth street that covered the stairway required to overcome the difference of 5 ft. 5 in. between the second floor level and the level of Tenth street. From this portico a corridor led to the east into the central mass of the structure which was occupied by a waiting-room 80 ft. square. The ticket office, a restaurant and smaller separate waiting rooms and toilet rooms for men and women were located in the wings with convenient access from the main waiting room. From the main waiting room a double spiral stairway located





Above — As the Burlington Station Appears Today. At the Right — Appearance of the Station Before Reconstruction

in the exact center communicated with a main lobby on the track level around which were grouped toilet rooms, a lunch room and other facilities, the baggage room occupying the lower level of the east wing and the express facilities being similarly located in the west wing. A street-vehicle ramp connecting with Tenth street south of the station, afforded access to the track level both for trucks and for taxicabs and automobiles, a porte cochère sheltering a passenger entrance on the south side of the main lobby.

Ample Floor Area on Second Floor

A study of the second floor plan of the old structure in the light of the requirements of a two-level station, indicated that the old waiting room possessed ample floor area, while a concourse erected over the tracks could be made to take the place of the main lobby to be abandoned on the track level. It remained, therefore to provide space in the two wings on the second floor for the various auxiliary passenger facilities formerly housed on the lower level. The manner in which this was done is readily seen on the floor plan. Very little change was made in the interior partitions but the east wing was extended 14 ft. 7 in. to provide a kitchen for the restaurant, and the west wing was extended to take in all the space occupied by the old portico. The west lobby was extended west to a vestibule at the Tenth street entrance and, instead of a stairway from the Tenth street level down to the floor level, this difference in elevation was overcome by a ramp extending the full length of the west lobby. The principal change made on the lower level was to exchange the spaces occupied by the baggage and express facilities so that the baggage room would be placed in the west wing making it possible to have a baggage counter on the second-floor level fronting on the west lobby.

Another requirement of this change in design was adequate loading and maneuvering space for cabs and automobiles at the street level, which was met by constructing a plaza 74 ft. 4 in. wide over the tracks along the north side of the west wing from Tenth street to the train concourse. This is arranged as a U-shaped driveway bounded by narrow walks and having an ample landing platform at the east or concourse end. Separating the two legs of the driveway is a high double curbing which serves as a guard for an opening in the pavement so located as to coincide with the center line of a track below and functioning as a smoke slot when locomotives stand or pass under the plaza on this track. A neat balustrade set off by attractive pylons equipped with duplicate bracket lamps forms the north boundary of this plaza.

Exterior Was Remodeled

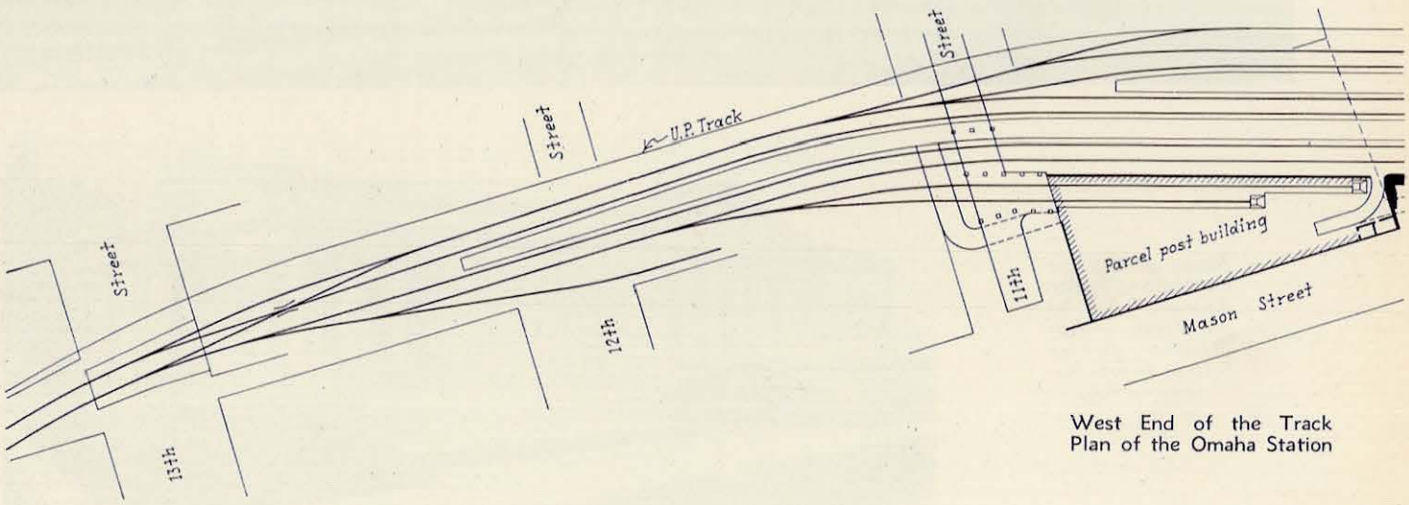
While the changes in the floor plan of the station, as stated above, were limited, marked changes were made in the exterior walls, the principal object of which was to increase their height. This was required to give the structure the necessary rise above the level of Tenth street, to raise the facade of the north elevation of the central mass above the train concourse and to increase the height of the waiting room ceiling. As remodeled, the top of the coping of the central portion is 58 ft. above the second floor level compared with 48½ ft. to the comb of the old gable roof, and the waiting room ceiling was raised from an elevation of 34 ft. to a height of 47 ft. 3½ in. above the floor.

The alterations which these changes involved, included the replacement of the old roof trusses with new ones to accommodate a new flat roof in place of the old gable roof; the removal of the old colonnade of the north facade to allow for the construction of a doorway connecting the waiting room and the train concourse and the construction of a new colonnade above the top of the concourse roof, and the enclosing of the entire exterior above the second floor level with Bedford limestone that is supported on an offset in the old masonry at the second floor line. No change was made in the outside walls of the lower story and foundation work was confined to the construction of pedestals for a row of six steel columns provided to support the new end wall of the west wing, and the columns that carry the plaza.

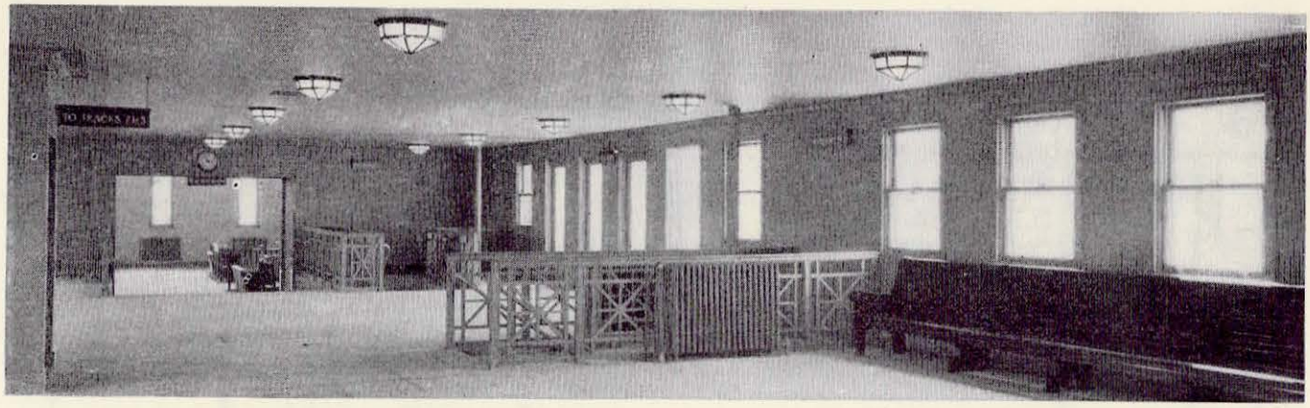
Of special note, in this connection, is the fact that the alterations were made without interruption of the station service. Owing to the duplication of practically all passenger accommodations on the lower level, it was necessary only to move the ticket office to a temporary location on the lower level to provide a complete station plant on the first floor. Access for street vehicles was already provided and foot passengers were accommodated by building an enclosed ramp on the south side extending from the street to the porte cochère entrance of the old main lobby.

An Attractive Waiting Room

While the floor plan of the station was not appreciably changed, the interior was subjected to a marked transformation in appearance and the refinished waiting room, in particular, is exceptionally attractive.



West End of the Track Plan of the Omaha Station



The Train Concourse Looking Toward the Entrance to the Main Waiting Room

The ceiling and the walls, except the frames of door openings are of plaster, while the door frames, drinking fountains and clocks are of Premier Zain Botticino marble. The wainscot which extends just above the door openings, is marked off in horizontal rustications, while above the wainscot, the wall area is set off by fluted pilasters. Above the pilasters is a plain frieze, ornamented by large medallions representing the seals of the Burlington's four premier trains—the Aristocrat, the Ak-Sar-Ben, the Fast Mail and the Blackhawk. The plain ceiling is set off by a heavy cornice.

The wainscot, pilasters and frieze have a light stone grey tint, the panels between pilasters and the ceiling are in rich rose, while the panel borders, the medallions and portions of the ceiling border are gold.

Artificial illumination of the waiting room is provided by four great lanterns of bronze and white glass, each of which encloses 98 60-watt lamps.

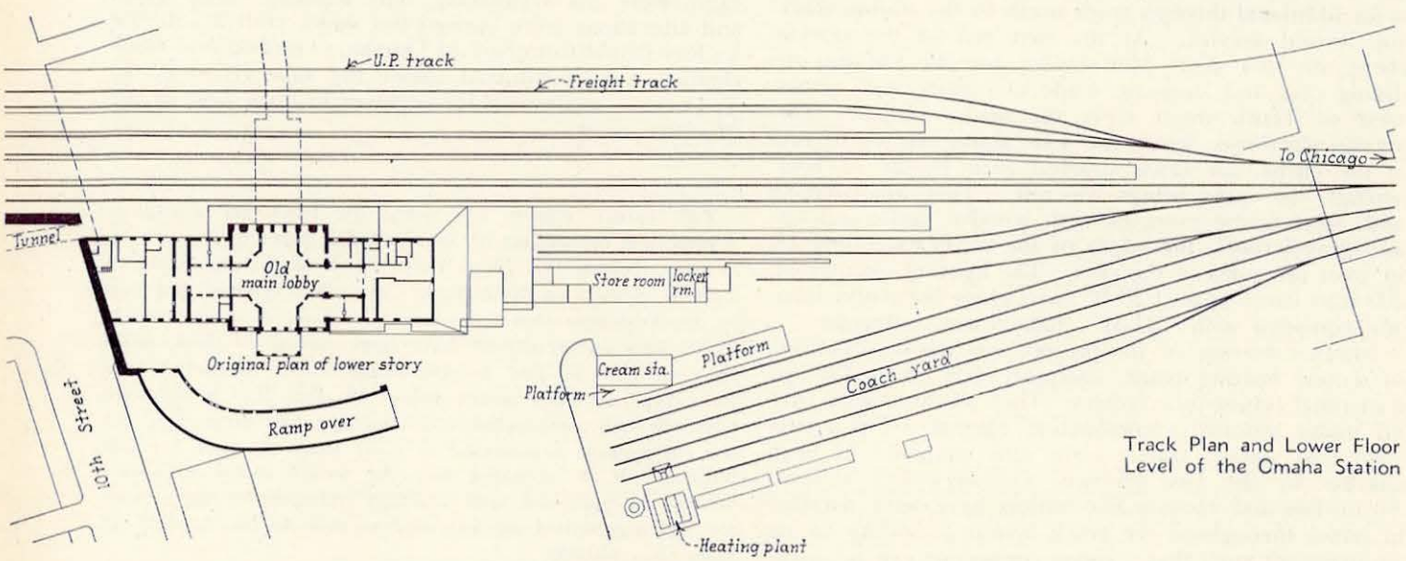
The east and west lobbies are treated in similar fashion except that the ceilings are coffered and the ramp floor of the west lobby is laid with art marble non-slip tile. The men's and women's waiting rooms and the restaurant have black walnut wainscots and were completely modernized and refurnished in keeping with the rest of the station.

The Concourse

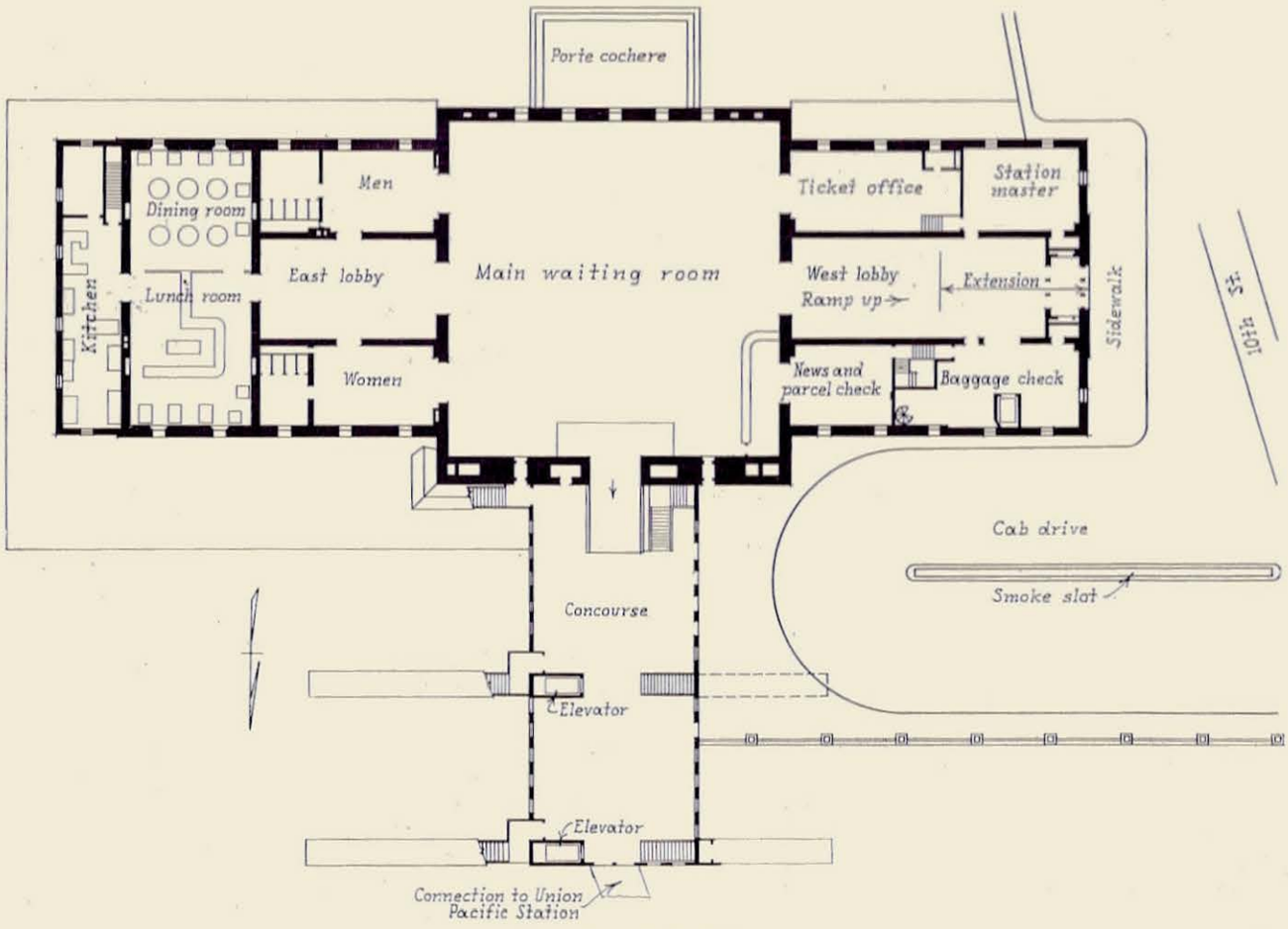
A doorway 11 ft. 9 in. wide in the north wall of the waiting room opens into the train concourse, an enclosure 39 ft. wide that extends out over the tracks a distance of 91 ft. The floor of this concourse is 4 ft. above the waiting room floor so a ramp 32 ft. long was introduced that extends into the waiting room a distance of 8 ft. The concourse is a concrete-encased steel frame structure with a reinforced concrete floor and roof. The ceiling and walls are plastered and the walls are sheathed on the outside with sheet metal. The floor is finished in terraza over a two-inch course of cork sound insulation.

Two enclosed stairways and an elevator connect the concourse with each of two island platforms while two others lead to a platform adjacent to the station building. As the baggage and express rooms are on the track level, the two elevators are used only for the handling invalid chairs or stretchers and red-cap hand-bag trucks. A third elevator has been provided in the west wing for communication between the baggage counter room and the baggage room. All elevators are equipped for automatic push-button control.

The track layout in front of the station was not extensively changed, but by the removal of a shoulder of the hillside west of the station, it was possible to eliminate a reverse curve in the west end of the station tracks, extend the tracks further west and change one stub track to a through track. In addition one additional through track was provided. In connection with these changes, the Tenth street viaduct was entirely rebuilt, the viaduct at Eleventh street was extended at the south end, a subway under the tracks at Thirteenth street was reconstructed and the one at



Track Plan and Lower Floor Level of the Omaha Station



Floor Plan of the Station

Fourteenth street was extended. The track changes also necessitated the construction of a tunnel 13 ft. wide under Tenth street south of the south abutment of the viaduct to afford a new connection between the station and the railway mail building located on the opposite side of the street.

Long Station Tracks

The station track layout as revised has five through tracks of which two will accommodate 22-car trains and the other three trains of from 13 to 15 cars. There is an additional through track north of the station track for freight service. At the east end of the station there are two short stub tracks for the parking of dining cars and sleepers, while two more stub tracks west of Tenth street serve the mail terminal. The station platforms, which are 4 in. above the top of rail at the curbs, are brick covered with 1½-in. of rock asphalt, the curbs beings concrete. They are covered with steel frame canopies with wooden decks and tar and gravel roofs, the edges of the roofs extending 18 in. over the sides of the cars. The lighting consists of 200-watt lamps spaced 20 ft. apart along the center lines and equipped with "RLM" enamel steel reflectors.

Another feature of the project was the construction of a new heating plant, equipped with three 150-hp. horizontal return-tube boilers. They are fired with fuel oil under automatic combustion control. The coach yard and station tracks were also equipped to heat coaches by the low pressure vacuum-return system. Steam-line and vacuum-line outlets have been installed in boxes throughout the track layout according to an arrangement such that a steam connection can be made to one end and a vacuum connection at the other end of a cut of cars of any ordinary length. Air for train charging and Murdock boxes for coach water supplies are also provided in the south island platform.

The project was carried out by the engineering department of the Burlington, under the direction of A. W. Newton, chief engineer, and W. T. Krausch, who was engineer of buildings until the time of his death on December 9, and H. G. Dalton, assistant engineer of buildings, who has since been promoted to succeed Mr. Krausch. Graham, Anderson, Probst & White, Chicago, were the architects. The building construction and alterations were carried out under contract by the V. Ray Gould Company of Omaha. Grading and track changes were conducted under the supervision of F. T. Darrow, assistant chief engineer of lines west of the Missouri river.

THE SAFETY ICELESS CAR using the silica gel absorption system, was the subject of an interesting paper by Horace M. Wigney, before the New York Food Marketing Research Council recently in New York City. Mr. Wigney said that in the 30 months that these cars have been in service nearly 25,000 tons of perishables have been carried in them, more than one-half of this amount being frozen products which were kept at temperatures below 18 deg. F. Seventy-two railroads have participated in the movement of these cars, and the car mileage represented is more than two and one-half millions. It is estimated that the weight saved with this system, as compared with ordinary refrigerator cars, using ice, has represented an increased revenue to the carriers of more than $60,000.

Reading Steam- and Exhaust-Pipe Temperatures

The Firing Platform

The Load- and Speed-Control Station

Thermic Syphons Tested at the University of Illinois

Application to Mikado locomotive gives 8.47 per cent increase in general boiler efficiency, according to laboratory test report*

THE chief purpose of the Thermic Syphon tests recently conducted at the University of Illinois, Urbana, Ill., was to measure the coal and water consumed in a modern locomotive when operated, under rigidly controlled conditions, both with and without syphons, in order to determine the magnitude of the fuel savings effected by this device. The tests were made during April, May, and June, 1930, in the locomotive laboratory on a 2-8-2 type locomotive, which was tested, first without syphons, and again after they had been applied.

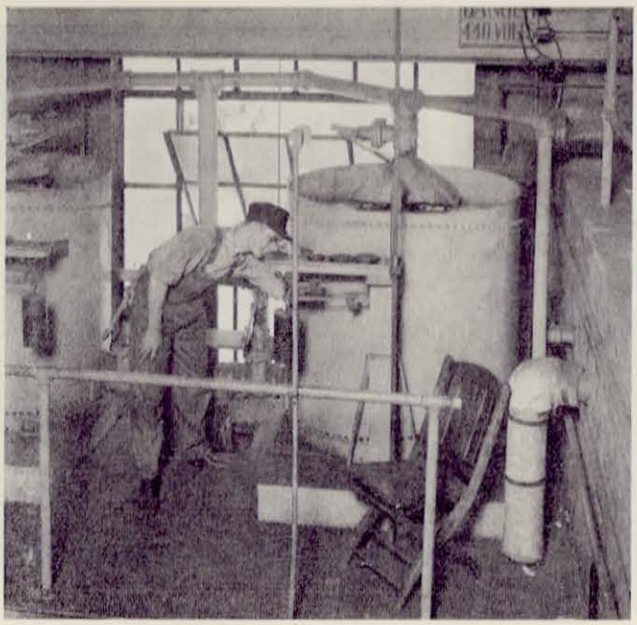
Since the syphons directly affect only the boiler performance of the locomotive, the adopted criterion of performance was the evaporation per pound of dry coal. The locomotive was operated at four rates of evaporation chosen to represent the ordinary range of boiler output in everyday service. At all rates of evaporation the syphon-equipped locomotive showed a definite and notable superiority over the non-syphon engine as regards both evaporation per pound of coal and boiler efficiency. The facts with respect to the gains in these two measures of heat transmission are summarized in two of the tables, which, for the four rates of evaporation selected, show an average increase of 7.74 per cent in equivalent evaporation per pound of dry coal and an average increase of 8.47 per cent in general boiler efficiency.

Concerning the secondary results of the tests, it is sufficient to say that such factors of performance as rate of evaporation, steam pressure, steam quality, draft, speed, cut-off and back-pressure were practically the same with and without syphons. At the three higher rates of evaporation the degree of superheat in the steam was substantially the same with the syphons and without them, while at the lowest rate the non-syphon locomotive produced about twenty degrees more superheat. There were differences in the temperature of the gases at various points in their passage through the boiler, which are discussed later.

Responsibility for the Test Results

This investigation was undertaken as one of the cooperative researches of the Engineering Experiment Station of the University of Illinois, in coöperation with the Illinois Central and the Locomotive Firebox Company, which manufactures the syphon. The railroad company furnished the locomotive, and all three agencies shared in the expense of conducting the tests. In accordance with the usual practice of the Experiment Station in carrying on such coöperative investigations, the general program for the research was laid down by

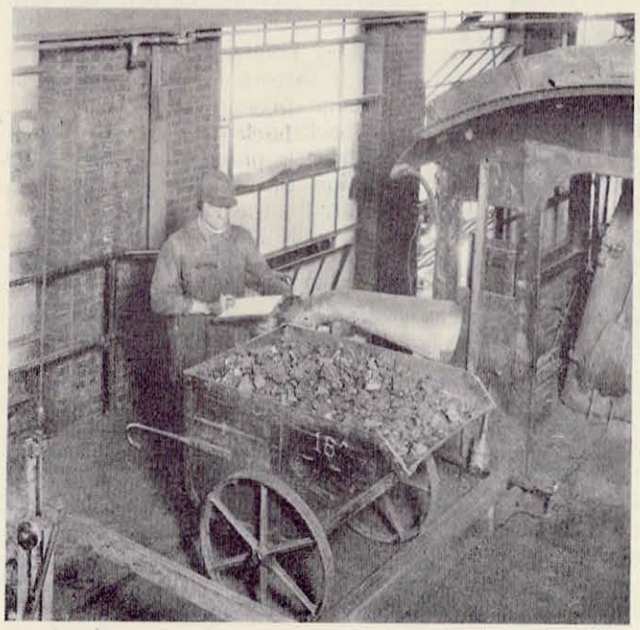
* A complete report of the test procedure and results is given in Engineering Experiment Station Bulletin 220, published by the University of Illinois, Urbana, Ill., the present article being an abstract of that bulletin. The general test program was laid down by an advisory committee, composed of Professor Edward C. Schmidt, head of the department of railway engineering, University of Illinois; B. J. Feeny, traveling engineer, representing the Illinois Central; and L. R. Pyle, vice-president, representing the Locomotive Firebox Company. E. G. Young, research professor of railway mechanical engineering, and H. J. Schrader, associate in railway mechanical engineering at the university, were in direct charge of the tests and the calculation of the data.



Weighing the Boiler Feedwater

an advisory committee which not only defined the test program, but were either present or represented in the laboratory throughout all tests. The conduct of the tests, however, the calculation and analysis of the results, and the preparation of the report were under the exclusive control of the Railway Engineering Department of the university, which acted for the Experiment Station and which assumes full responsibility for the validity of the tests and their results.

The locomotive used for the tests was of the 2-8-2 type with 218,300 lb. on drivers, 27-in. by 30-in. cylinders, and is rated at 54,588 lb. tractive force. The boiler is of the straight-top, radial-stay type, composed of three ring courses and the back end, with 3,667.8 sq. ft. of evaporative heating surface, which was increased to 3,722.8 sq. ft. by the installation of the syphons, and with 70.4 sq. ft. of grate area. A security brick arch was mounted on four 3-in. arch tubes, this



Method of Delivering Coal to the Firing Platform

mounting being altered when the syphons were installed. The grates were of the rocking finger type, with 12 shaking bars on each side of the center, and a pair of 13½-in. dump grates at the back. The openings in the grate amount to 25.89 sq. ft., or 36.8 per cent of the grate area.

The boiler was provided with a Type A superheater, built by The Superheater Company, and comprising 36 units and a header of the through-bolt type, providing 1,074.4 sq. ft. of heat-transfer surface. The superheater damper was wired in the open position during the entire time the locomotive was in the laboratory.

The front-end arrangement provided for no extension stack, but the petticoat pipe extended up to the level of the stack opening in the smokebox, leaving a passage of about 147 sq. in. area around the petticoat into the stack. The nozzle tip had a circular opening 6¼ in. in diameter, provided with a ⅜-in. knife-edge bridge, the edge of which was set ¼ in. below the top of the tip.

The valve gear was of the Walschaert type, with forward motion taken from the bottom of the link, the return crank consequently lagging behind the main crank. Miscellaneous engine equipment included a Franklin pneumatic butterfly-type firedoor, a Ragonnet pneumatic reverse gear, Simplex injectors, and Alemite lubrication on hub liners.

The boiler of the locomotive was in first-class condition throughout its stay in the laboratory. The surfaces in contact with the boiler water were inspected upon arrival and were found to be practically clean. Treated feedwater was used during the tests; and examination of the boiler surfaces at the close of the first series of tests without the syphons and again at the end of the second series with the syphons showed that the only deposit during the tests was a very thin powdery white coating, which could be easily wiped off with the hand.

The steaming of the engine, from the outset, indicated that the drafting arrangements were satisfactory, and no change whatever was made in the front-end after it was received at the laboratory. The front-end was inspected at the beginning of the tests, during their progress, and at their conclusion; everything in it remained intact.

It is to be emphasized that, except for the installation of two syphons and the change in the firebox heating surface and volume thereby entailed, no change which could affect the performance of the locomotive was made between the tests of Series I and those of Series II.

The fuel used during the tests was Illinois run-of-mine coal, produced at a single mine, passed over a 2-in. screen and designated as 2-in. lump coal. The average heating value of the coal, as fired, was 11,890 B. t. u. per pound, the maximum value for any test being 12,133 B.t.u. and the minimum, 11,623 B.tu. [A study of Bulletin 220 indicates that the greatest care was exercised to protect the coal from the weather and assure uniformity in heating value and size throughout all tests.—Editor.]

General Test Procedure and Program

The test methods and procedure were, in general, in accordance with the requirements of the American Society of Mechanical Engineers' Test Code for Steam Locomotives.

Under the decisions of the advisory committee, tests were run, in each series, at four rates of evaporation—nominally 17,500, 27,500, 37,500, and 45,000 lb. per hour (actual evaporation). These rates were chosen to repre-

sent the usual range in evaporation rate of Engine No. 1742 in road service. The test conditions were so set as to attain in Series II the same rates of evaporation as in Series I; and although this similarity was not precisely realized at all rates, the difference between the two series is small, the maximum difference in average rate being only 2.4 per cent.

Table I—Boiler Performance—Main Results

Series	Evaporation rate	Test number	Test conditions (nominal) Speed, r.p.m.	Test conditions (nominal) Cut-off, per cent	Dry coal burned per hour, lb.	Equivalent evaporation per hour, lb.	Equivalent Evaporation per pound of dry coal, lb.	Boiler efficiency, per cent
Series I without syphons	First	2702	80	25	2351	21,809	9.28	70.14
		2703			2335	21,277	9.11	68.77
		2706			2416	21,737	9.00	68.65
		Averages			2367	21,608	9.13	69.19
	Second	2701	120	30	3369	31,334	9.30	71.73
		2704			3461	32,232	9.31	71.06
		2707			3513	31,604	9.00	69.50
		Averages			3448	31,723	9.20	70.76
	Third	2705	120	45	5382	46,924	8.72	67.62
		2708			5484	47,857	8.73	65.59
		2714			5381	47,935	8.91	69.72
		Averages			5416	47,572	8.79	67.64
	Fourth	2710	180	45	6650	57,253	8.61	67.26
		2712			6676	55,912	8.38	65.76
		2713			6685	56,107	8.39	66.74
		Averages			6670	56,424	8.46	66.59
Series II with syphons	First	2716	80	25	2209	21,577	9.77	76.93
		2719			2161	21,573	9.98	78.13
		2724			2176	21,532	9.90	77.80
		Averages			2182	21,561	9.88	77.62
	Second	2725	120	30	3120	31,027	9.94	76.26
		2728			3079	30,860	10.02	76.55
		2729			3174	31,006	9.77	75.51
		Averages			3124	30,964	9.91	76.11
	Third	2722	120	45	4832	46,947	9.72	75.61
		2723			4915	46,870	9.54	73.26
		2731			4925	46,175	9.38	73.47
		Averages			4891	46,664	9.55	74.11
	Fourth	2718	180	45	6121	54,796	8.95	70.10
		2721			6046	55,634	9.20	70.46
		2730			6007	54,743	9.11	69.23
		Averages			6058	55,058	9.09	69.93

The other main test conditions prescribed by the Advisory Committee were that not less than 20,000 lb. of coal be burned in each test, and that the program be continued until, in each series and at each rate of evaporation, three tests had been secured whose results should be in such close agreement as to establish a reliable average result for the rate in question. In order to avoid the disturbance arising from blowing safety valves, all tests were run at a nominal steam pressure of 182 lb. instead of at the usual working pressure of the locomotive (185 lb.).

Table II—Equivalent Evaporation Per Pound of Coal, Adjusted to a Common Evaporation Rate

Evaporation rate		Equivalent evaporation per hour, lb.	Equivalent evaporation per pound of dry coal: Series I without syphons, lb.	Equivalent evaporation per pound of dry coal: Series II with syphons, lb.	Increase in the equivalent evaporation per pound of dry coal due to syphons: Pounds (Col. 4—Col. 3)	Increase in the equivalent evaporation per pound of dry coal due to syphons: Per Cent (Based on Col. 3)
1		2	3	4	5	6
First		21,608	9.13			
		21,561		9.88		
	Mean (line a)	21,585	9.13	9.88	0.75	8.21
Second		31,723	9.20			
		30,964		9.91		
	Mean (line b)	31,344	9.20	9.91	0.71	7.72
Third		47,572	8.79			
		46,664		9.55		
	Mean (line c)	47,118	8.80	9.53	0.73	8.30
Fourth		56,424	8.46			
		55,058		9.09		
	Mean (line d)	55,741	8.48	9.05	0.57	6.72
Average for all four rates						7.74

During the entire main investigation 31 tests were run, numbered from 2701 to 2731 inclusive. Seven of these 31 tests failed in some respect to meet the prescribed conditions, and they are therefore not included among the tests upon which the main results and conclusions, presented in the body of the bulletin are based.

There remain therefore 24 tests which comply in all respects with the requirements laid down by the advisory committee—twelve tests in each series; and, in each series, three tests at each rate of evaporation. The conclusions with respect to the relative performance of the locomotive with and without syphons rest exclusively upon these 24 tests,

Firing and Handling the Coal

During all tests the locomotive was hand-fired by the so-called "level firing" method. The fireman, Kelly Taylor, was chosen for the laboratory work by B. J. Feeny. Mr. Taylor is one of the regular firemen on the Illinois Division of the Illinois Central, has been eighteen years in service and stands near the head of the list for promotion to engineman. Although he had not previously fired in the test plant, he readily adapted himself to laboratory conditions, and his capability and skill were constantly evident.

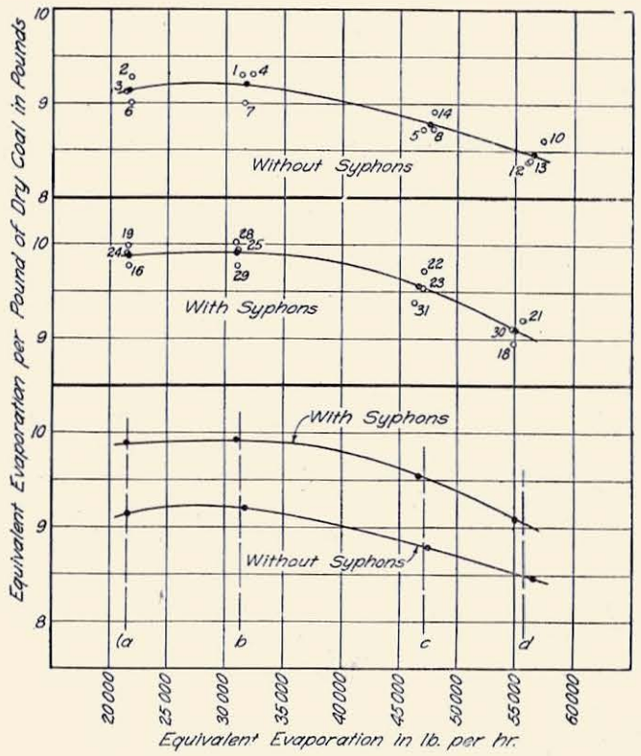


Fig. 1—Curves of Equivalent Evaporation per Pound of Dry Coal at Various Rates of Evaporation

The firing was of quite unusual uniformity and regularity, as is evidenced by the very narrow range within which the time required to burn ten tons of coal varied in successive tests at each rate of running. The most striking example of this regularity is afforded by the three tests run without syphons at the highest rate of evaporation (tests 2710, 2712, and 2713). These tests each lasted 2.85 hours, the variation between them being less than one minute.

The coal was received in side-dump cars which were discharged upon a concrete pavement. It was shoveled from this pavement into the laboratory barrows, each holding about 1,000 lb.; the largest lumps, such as are ordinarily broken on the engine deck, being broken down at this time. The barrow was then taken to the weighing scales, where the load was adjusted to ex-

actly 1,000 lb.; and from there it was elevated to the firing platform.

For all tests the fire was built up from a clean grate, the time until full boiler pressure was attained averaging about three hours. After the steam pressure had been built up, the locomotive was run through a period varying, from test to test, from fifteen minutes to half an hour, while the speed and load required for the desired evaporation rate were being established. Thereafter the locomotive was run for a further period of fifteen minutes or longer in order to establish the final setting of the injector, to obtain the desired water level in the boiler, and to ensure that all other conditions of operation were steady; and the test was started.

The speed of the engine was controlled by controlling the water-pressure within the absorption brakes. It was at all times maintained nearly constant and close to the rate desired in the various tests. Constant cut-off during any test was ensured by fixing the position of the crosshead of the power reverse gear with three steel bars of pre-determined length.

The boiler feedwater was weighed in two tanks, each holding a maximum of about 2,200 lb., and so arranged that one tank was emptying into the main feed tank while the other was being filled from the feedwater supply line. The weighing tanks were mounted on separate scales, each of which had a tare beam upon which the weight of the empty tank could be balanced. The water in the main feed tank was kept at nearly constant level so that the injectors should work against practically constant head.

Main Results of the Tests

Table I shows the values of equivalent evaporation per pound of dry coal for each of the tests, and also its average value for the three tests run at each of the four evaporation rates, in each series. The upper curve shows the results for the tests of Series I, without the syphons; while the curve in the center of this figure gives the results for Series II, with the syphons. The circles plotted in Fig. I represent the values for the individual tests (the numbers affixed to these circles are the last one or two numerals of the test numbers), whereas the round spots represent, for each of the four rates of evaporation, the *average* evaporation per pound of coal at the *average* rate of evaporation. The curves drawn in this figure are made to pass through these spots representing the average values, and they are accepted as defining the test performance of the boiler without and with syphons, respectively. In order to facilitate comparison, these curves and the plotted average values are duplicated and brought together at the bottom of the chart.

As is always the case in a locomotive, the equivalent evaporation per pound of coal falls off, in general, as the rate of evaporation increases, due to the decrease in boiler efficiency which accompanies higher rates of evaporation and combustion. Because of this decrease, and because the evaporation rates for the two series of tests are not precisely alike, the average values plotted are not directly comparable but must be adjusted, as illustrated, in Table II. The efficiency values are also adjusted for a similar reason (see Table IV).

Under the conditions which prevailed during the tests, locomotive No. 1742 generated 8.21, 7.72, 8.30, or 6.72 per cent more steam per pound of dry coal when equipped with syphons than when not so equipped, at the respective hourly rates of evaporation here shown.

The values of boiler efficiency (ratio of the heat units transmitted to the steam to the heat units in the coal fired), attained during each test, and also of the average efficiency for the three tests run at each of the four evaporation rates, in each series, appear in the last column of Table I. These values are plotted in the upper part of Fig. 2, where the circles represent the efficiency values for individual tests, while the round spots represent, for each of the four rates of evaporation, the average result at the average hourly evaporation rate. For convenience in comparing them, these average values are assembled in Table III, which shows, therefore, for each evaporation rate in each series, the direct results of the tests.

Boiler efficiency, since it takes into account any existing difference in heating value, is a better criterion than evaporation per lb. of dry coal; and the real superiority of the syphon, as a device for stimulating the heat transmission in a locomotive boiler, is doubtless more truly revealed by the gains in efficiency. The syphon is especially advantageous during the period of building up the fire and attaining full steam pressure (as was demonstrated in a special test run); and this advantage repeats its influence after each stop of considerable length. During the tests, however, the engine was run continuously and in them, consequently, this advantage could make itself felt only once. If, therefore, the conditions of road service are such as to entail frequent stops of considerable duration, it may be expected that the gains effected by the syphons at all rates of evaporation will be greater than the gains shown during the tests.

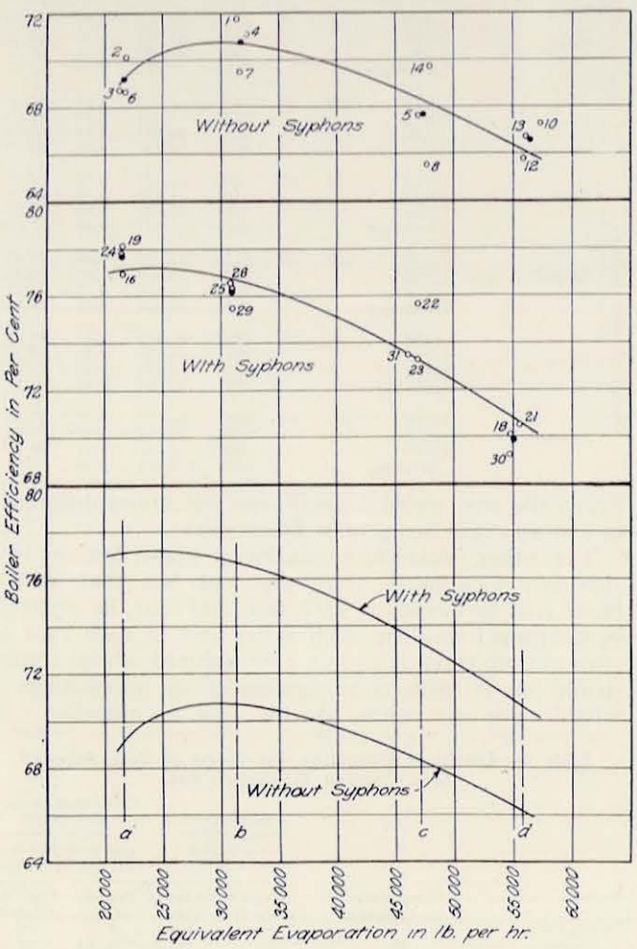


Fig. 2—Curves of Boiler Efficiency at Various Rates of Evaporation

In any consideration of the firebox temperatures, the location of the pyrometer thermocouples should be borne

in mind. It may be pointed out that the couple below the arch was situated 26 in. above the grate; its distance from the top of the firebed varied therefore from about 20 in. to about 8 in. as the tests progressed and the fire grew in thickness. Crosswise of the firebox this couple was about 22 in. from the nearer syphon leg and 12 in. from the side-sheet; lengthwise of the firebox it was approximately over the middle of the grate. Considering the right hand half of the firebox, this thermocouple was consequently roughly midway between the arch and the fire and a little to the right of the center of this space.

Table III—Boiler Efficiency, Based on the Average Direct Results of the Tests

Evaporation rate	With or without syphons	Equivalent evaporation per hour, pounds	Average boiler efficiency, per cent	Difference in efficiency, per cent	Percentage gain in efficiency due to syphons, based on Series I	Percentage gain in evaporation, adjusted values	Average heating value of the dry coal, B.t.u. per lb. For each series	Average heating value of the dry coal, B.t.u. per lb. Difference between series
1	2	3	4	5	6	7	8	9
First	Without	21,608	69.19	8.43	12.18	8.21	12,802	452 more without
	With	21,561	77.62				12,350	syphons
Second	Without	31,723	70.76	5.35	7.56	7.72	12,616	18 more with
	With	30,964	76.11				12,634	syphons
Third	Without	47,572	67.64	6.47	9.57	8.30	12,605	114 more without
	With	46,664	74.11				12,491	syphons
Fourth	Without	56,424	66.59	3.34	5.02	6.72	12,325	285 more with
	With	55,058	69.93				12,610	syphons
All	Without	General average values for all four rates of evaporation			8.58	7.74	12,587	66 more without
	With						12,521	syphons

The thermocouple used for measuring temperatures above the arch was placed about halfway between the front contour of the syphons and the rear tube-sheet—12 in. from each. Between the two syphons there was a space 16¼ in. wide, bisected by the central plane of the boiler; and this couple lay in the forward continuation of this space, six inches off the boiler center line.

Following the customary practice in measuring furnace temperatures, neither of these thermocouples was protected from radiant heat. The temperature measured by them is consequently a composite of the radiant heat received by the couple and the heat imparted to it by convection from the gases making contact with the pyrometer element; and there is the usual uncertainty as to how closely the measured temperature represents the true temperature of the gases. Notwithstanding this uncertainty the recorded temperatures, for the sake of brevity, are referred to as "gas temperatures."

Table IV—Boiler Efficiency—Values Adjusted to a Common Evaporation Rate

Evaporation rate	Equivalent evaporation per hour, lb.	Boiler efficiency, adjusted values: Series I without syphons, per cent	Boiler efficiency, adjusted values: Series II with syphons, per cent	Difference in efficiency between the two series	Increase in efficiency due to syphons, Col. 5 / Col. 3 × 100, per cent
1	2	3	4	5	6
First	21,585	69.15	77.18	8.03	11.61
Second	31,344	70.78	76.71	5.93	8.38
Third	47,118	68.32	73.32	5.00	7.32
Fourth	55,741	66.23	70.58	4.35	6.57
General average increase in efficiency, for all four rates.....					8.47

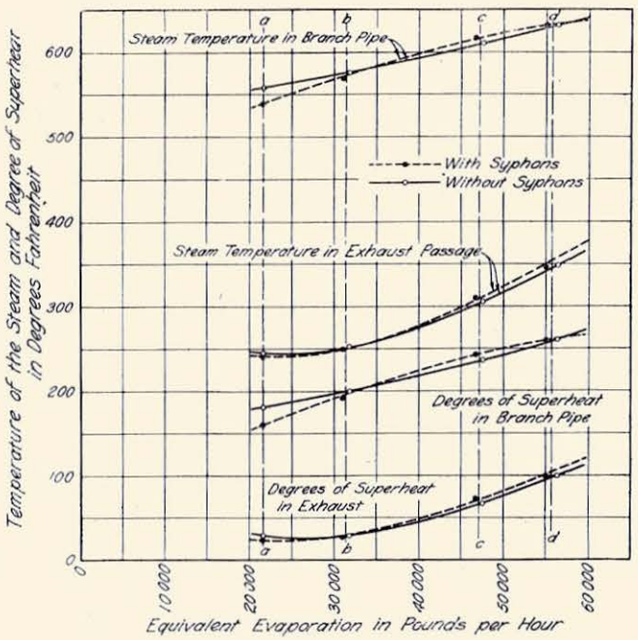

Steam Temperature in Branch Pipe
With Syphons
Without Syphons
Steam Temperature in Exhaust Passage
Degrees of Superheat in Branch Pipe
Degrees of Superheat in Exhaust
Temperature of the Steam and Degree of Superheat in Degrees Fahrenheit
Equivalent Evaporation in Pounds per Hour

Fig. 3—Steam Temperatures and Degrees of Superheat in the Branch Pipe and in the Exhaust Passage

when adequate consideration is given to the large amount of heating surface added by the syphons, and to the favorable position of this additional firebox surface.

The firebox heating surface (including arch tubes) without the syphons is 266.6 sq. ft. and with them, 321.6 sq. ft.—an increase of 55 sq. ft., or 20.6 per cent. With a firebed of average depth, about 40 sq. ft. of firebox heating surface in Engine 1742, immediately bounding the firebed, is relatively ineffective; and if this be excluded, the increase, with syphons, in really active heating surface amounts to about 24 per cent. This additional heating surface is ideally placed to absorb the radiant heat from the fuel bed and from the arch; and it is likely also that it receives from the incandescent gas

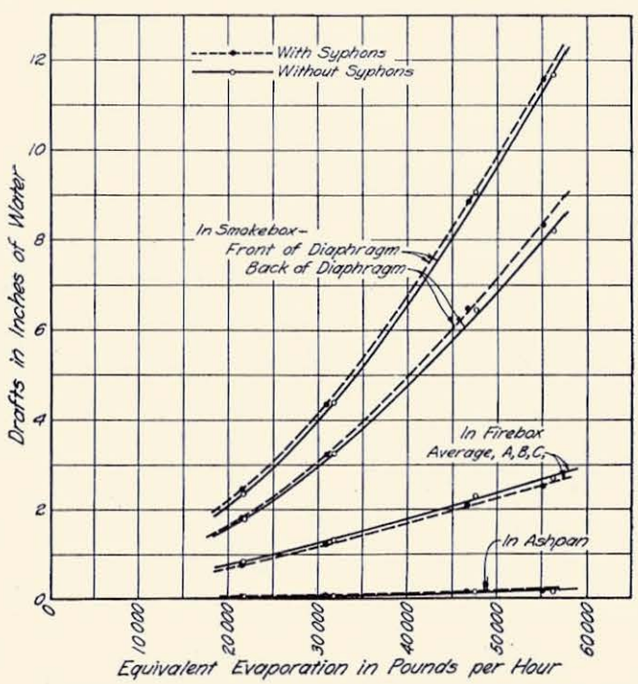


Fig. 4—Draft in the Smokebox, Firebox and Ashpan at Various Rates of Evaporation

traversing the center of the firebox radiant heat which, in the plain firebox, might not be fully absorbed by the side-sheets. As far as heat transfer by convection is concerned, the syphons are in an equally favorable position; for the gases passing them probably have a higher velocity than exists elsewhere within the firebox and the turbulence of these gases is at least as great as anywhere else within the boiler. In addition, the velocity of the mixture of water and steam over the inner surfaces of the syphons is probably greater than over any of the other heating surfaces. All these factors taken together seem sufficient to account for the great differences in firebox temperatures in the non-syphon and the syphon-equipped locomotive.

The general average difference in temperature below the arch was 202 deg. F., whereas above the arch it was 395 deg. F. This two-fold increase in the relative absorption of heat is understandable when we recall that the pyrometer element above the arch was placed beyond the syphons and that the difference in temperatures here recorded is consequently a measure of the full ef-

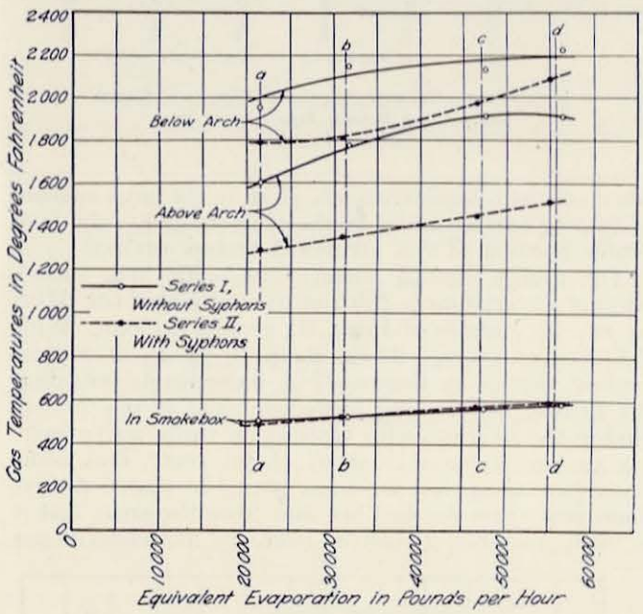


Fig. 5—Gas Temperatures in the Firebox and Smokebox at Various Rates of Evaporation

fect of the syphons, whereas below the arch the temperature is recorded at a point where the syphons have not yet exerted their full effect.

(The Bulletin here included an extensive and informative discussion of smokebox temperatures from which the following inferences were drawn.—Editor) Apparently the superheater surface was sufficient to abstract from the gases, during the tests with syphons, the amount of heat it was designed to abstract, in spite of the fact that the average temperature of the gases as they traversed the flues was less than during the tests without syphons. In other words, the superheater took its required amount of heat although the total heat available as the gases passed through the body of the boiler was less. It would follow, of course, that during the tests with syphons the heat transmitted to the *water* surrounding the tubes and flues must have been less than during the tests without syphons. If these views be accepted, it would seem that the gains in heat transmission made by the syphons within the firebox must have been even greater than would be inferred by considering merely the overall gains in evaporation and efficiency, sufficiently greater to offset the decreased transmission to the water in the body of the boiler.

Increased Rates Proposed for Alaskan Road

WASHINGTON, D. C.

AN IMMEDIATE increase in the passenger rate of the government's Alaska Railroad from 6 to 10 cents per mile and a general increase in freight rates sufficient to afford an increase in freight revenue of 50 per cent, together with a reduction of 100,000 train-miles a year, is the method proposed for reducing the railroad's annual deficits by a select committee of the Senate appointed to investigate the affairs of the road. The committee was composed of Senator Howell, of Nebraska, who is himself supposed to have certain government ownership leanings, and Senators Kendrick, of Wyoming, and Thomas, of Oklahoma.

Senator Copeland, New York, twitted Senator Howell a little in the discussion of the report in the Senate on January 5, asking if he had heard aright that the committee had proposed an increase in rates on a government-owned railroad. Senator Howell replied that the railroad had incurred deficits "not necessarily because of government ownership but in spite of government ownership," and that the committee had deemed that "a course should be taken such as would be taken if the railroad were a privately-owned concern." A summary of the report of the committee as furnished to the Senate follows:

There are three railroads in Alaska operating in contiguous territory and under similar conditions, each approximately paralleling the others. These are the government-owned Alaska Railroad and the privately owned White Pass and Copper River railroads. The White Pass Railroad is 350 miles east and the Copper River Railroad 150 miles east of the Alaska Railroad.

The passenger rate on the White Pass Railroad is 20 cents per mile, on the Copper River Railroad 12 cents, and on the Alaska Railroad 6 cents per mile. The freight rates on the White Pass Railroad average about 420 per cent higher than the freight rates prevailing in the Pacific-mountain region of the states, on the Copper River Railroad 251 per cent higher, and on the Alaska Railroad but 30 per cent higher. The traffic rates on the two privately owned roads are such as are deemed commercially necessary, and have not been objected to by the Interstate Commerce Commission, to which body these roads report.

The inadequacy of the traffic rates on the Alaska Railroad is such that the cost of the railroad to the government for 1930 was $1,213,000 in excess of its income and for the last seven years $8,100,000, not including depreciation, or interest on the investment totaling some $70,000,000.

The Alaska Railroad rates are inadequate because of:

1. The relatively high cost of maintenance due to the fact that the road traverses regions still in the making.

2. The severe climatic conditions—temperatures during the winter ranging on the northern stretches of the road from 10 to 50 degrees below zero, while heavy snowfalls are contended with near the coast.

3. The scanty population, numbering as it does less than 8,400 inhabitants, within the 50,000 square miles tributary to the road.

4. The lack of outgoing freight traffic largely resulting in the loading of inbound freight trains only.

Contributing also to the annual deficits of the road is looseness and inefficiency in the conduct of the railroad's business, of which the following facts are indicative:

(1) The accounts receivable, an accumulation of years, totals $324,000, and no suit has been brought to enforce collection in any case.

(2) The purchase and continued operation of a bankrupt narrow-gage railroad extending 40 miles north from Fairbanks, which from the beginning lost $121 per day. This road was recently abandoned and represents a loss of about $1,000,000.

(3) The operation of an electric, water, and heating plant in Nenana, a hamlet of 293 inhabitants, at a net cost to the government of $19,000 per year.

(4) The abandonment in September, 1929, of the Anchorage electric distribution system and profitable power service without compensation for the benefit of a privately owned hydroelectric plant at a net loss to the railroad of $55,000 for the first nine

(*Continued on page 157*)

Rail Executives Reach Agreement on

FOUR SYSTEM PLAN IN EAST

By Harold F. Lane
Washington Editor, Railway Age

Urged by the President, executives of N. Y. Central, B. & O., C. & O. and P. R. R. agree and submit plan to commission

CONSOLIDATION of the railways into fewer and bigger systems, for the purpose of increasing their financial stability and operating efficiency while equalizing their access to sources of production and centers of distribution, is President Hoover's present remedy for the serious economic situation into which the roads have been forced by the growing competition of other forms of transportation.

President Hoover has been one of the foremost advocates of a policy of railway consolidation about as long as he has been one of the chief proponents of waterway development, but concern for the future of the railroads in the face of this new competition is his principal reason for assuming a position of leadership in the consolidation movement at this time. While large expenditure of government funds for the deepening and widening of rivers and construction of highways is also a prominent feature of his remedy for the unemployment situation, he is also deeply concerned about the effect on railway traffic of the increased use of motor vehicles, waterways, pipe lines and electric power. He believes that to meet this competition and regain their traffic and re-employ their men they must be strengthened financially so that they may be in a position to command the investment necessary to enable them to adopt measures to reduce costs and rates. Consolidation, he thinks, will tend to accomplish these results, particularly in the East, where he considers it necessary to group the other roads into systems comparable with the New York Central and Pennsylvania.

This concern as to the ability of the railways to meet the competition is somewhat interesting in view of the argument repeatedly made by the waterway advocates, including Mr. Hoover, that the development of water transportation was needed because the growth of traffic would be such that the railways would be unable to handle it and that the waterways were not intended to compete with the railways but to supplement and relieve them.

Views Railway Situation as Major Problem

He is understood to feel that the steady undermining of railway traffic presents one of the greatest economic problems now before the country and that we must look forward either to a period of reorganization or of continued distress in the nation's largest single industry, and the one on which the country is most dependent, that would prolong the general depression. If rates are to be reduced, he is understood to believe, it will be necessary for the railways to further reduce operating expenses through elimination of duplications and the adoption of sounder methods, such as through electrification and more economical operation of terminals, which would require large capital expenditures, or, alternatively, through wage reductions. As for the immediate future the President appears to be counting considerably on the spirit of confidence to be engendered by the agreement and the removal of the uncertainty which has hung over the eastern situation so long and which has undoubtedly held back many plans for improvement programs.

For this reason the President has not only been instrumental in bringing the executives of the eastern roads to an agreement, after several years of conferences, on a plan to be presented to the Interstate Commerce Commission for grouping the Eastern roads outside of New England into four great systems, but, by making the first public announcement of their agreement from the White House in approving language, he has stood before the country as sponsor for a plan for which it is still necessary to obtain the approval of the commission as a substitute for an important feature of its own plan, in the face of the opposition of an active and determined element in Congress.

Incidentally the President has apparently joined forces with the executives of the leading eastern roads to knock into a cocked hat the commission's plan for grouping the eastern lines into five systems, including the fantastic combination of the Wabash, Norfolk & Western and Seaboard Air Line. As a result the year 1931 promises to be one of great activity so far as unification proceedings before the commission are concerned, in marked contrast with the first year following the promulgation of the commission's consolidation plan.

It is understood that the President's influence in the situation was exerted about two months ago, after the conferences of the eastern executives had come to something like a standstill, and that his request caused them to resume their efforts; also that the Interstate Commerce Commission's order made public on December 6 directing the Pennsylvania to give up its Wabash holdings may have helped toward bringing that company to an agreement. The commissioners knew, of course, that the eastern executives had resumed their conferences, but apparently had not been informed that the President had taken a hand in the situation, and it is understood that he had not consulted any of them as to any of the details of a plan but had contented himself with urging the railroads, that under the theory of the law are supposed to take the initiative as to unification, to renew their efforts toward finding an acceptable plan to submit to the commission.

Fifth System on "Unsolvable Basis"

In a statement issued on December 30 at the White House announcing that the executives of the Baltimore & Ohio, New York Central, Pennsylvania and the Van

Sweringen lines had agreed upon a plan, for presentation to the commission, for consolidating the eastern roads into four independent systems, President Hoover said that the negotiations which had been in progress for some weeks, following many earlier conferences which had failed to result in agreement, had been undertaken at his suggestion, "in the hope of effecting the consolidation policies declared by Congress in 1920 and especially at this time as a contribution to the recovery of business by enlarging opportunity for employment and by increasing the financial stability of all the railways, and particularly some of the weaker roads."

He also referred to the commission's "suggested plan" for five systems as one which "like others, has met with objections which apparently made it an unsolvable basis."

While the President emphasized that the plan must be submitted to the Interstate Commerce Commission, "who have the independent duty to determine if it meets with every requirement of public interest," the fact that he had indicated his general approval of the plan caused him to be violently attacked by Senator Couzens and other anti-consolidation and anti-railroad men in Congress, who charged him with an attempt to influence the judgment of the commission in advance. It is certain, therefore, that efforts will be made in Congress to block the plan.

It is understood on high authority, however, that President Hoover took no actual part in the formulation of the details of the plan and at the time he announced it, and for two or three days afterward he knew no more of it than had been given him over the telephone from New York. Although he is understood to have been convinced that the eastern railway situation lends itself better to a four-system grouping, in order that the other systems may be built up to a strength approximating that of the Pennsylvania and New York Central, each having access to the principal producing and distributing centers, his chief satisfaction arises from the fact that an agreement has finally been reached after so many years. He could have used most of the same language if the roads had agreed on a practicable five-system or six-system plan and he expects that the commission may require modification of details of the plan or of the terms and conditions proposed, while recognizing that it is within its power to refuse to approve it at all.

Four or Five Systems in East?

Although the new plan completely wrecks the idea of a five-system grouping of the eastern lines, in most other respects it follows the commission's plan rather closely, and there is no particular reason for believing that the commission, at least as at present constituted, is especially wedded to the details of the plan it put out a year ago in order to have some plan to comply with a law which includes specific provision for modifications from time to time. While the commission stated at the time that a majority of its members had agreed as to each part of the plan proposed, the majority was not always the same, and it is known that there was considerable difference of opinion as to whether there should be four or five eastern systems. Also there are now three commissioners who have been appointed since the commission's plan was adopted.

While Secretary of Commerce, Mr. Hoover was one of the most active advocates of railway consolidation, taking the position that the roads could be so grouped into strong systems as to equalize their earning capacity and retain otherwise recapturable earnings within the systems. As President he has on several occasions urged legislation to promote greater expedition in the consolidation process and some time ago the Republican National Committee issued a statement listing as one of the achievements of his administration the fact that the commission had finally promulgated its consolidation plan in December, 1929. The President also said:

The President's Statement

The Transportation Act passed by Congress in 1920 provides for a consolidation of railways into a limited number of strong systems in order to maintain broader competition, more adequate service, simplification of rate structure, lower operating costs and in the long run lower rates to the public.

During the past ten years a possible grouping of the roads so as to carry out the law has been under constant discussion. The Interstate Commerce Commission has no power to compel such consolidations. They can only be effected upon initiation of the carriers. During this period a number of negotiations have been undertaken in respect to these railways, with view to carrying out the wishes of Congress, but they have proved abortive. A year ago the Interstate Commerce Commission issued a suggested plan for consolidating these roads into five systems. This plan, like others, has met with objections which apparently made it an unsolvable basis.

These uncertainties and delays over nearly ten years have seriously retarded development of the railways and have prevented a desirable growth in many directions, and have diminished their ability to compete with other forms of transportation. Such questions as electrification, linking up of different railroads, development of terminals and many other major improvements have been retarded because of uncertainty with respect to the position which particular roads are to occupy in the permanent grouping.

It is my understanding that the plan provides for the protection of the interests of the employees and full consideration of the interest of the various communities and carriers out the requirements of the law in protection of public interest generally. The presidents of the major systems have agreed upon the many details of the plan with the exception of a minor point, which is left to arbitration.

The plan, of course, must be submitted to the Interstate Commerce Commission, who have the independent duty to determine if it meets with every requirement of public interest.

Plan Phoned to I. C. C.

While the main features of the plan were allowed to leak out in New York immediately after the announcement and after an all-day conference of the executives on December 29, it is understood that the complete alignment was not agreed upon until another conference on January 2 when a preliminary letter to the commission giving an outline of the plan was drafted and given out in New York after having been telephoned to chairman Brainerd of the commission.

The letter of the eastern railway executives, signed by W. W. Atterbury, president, Pennsylvania; P. E. Crowley, president, New York Central Lines; Daniel Willard, president, Baltimore & Ohio; J. J. Bernet, president, Chesapeake & Ohio follows:

In its opinion, in the matter of consolidation of railway properties of the United States into a limited number of systems, Dec. 9, 1929, I. C. C. 159-522, the Commission said:

In a matter of this magnitude in scope and complexity in detail, even after the most careful study and the fullest and freest interchange of views by those charged with the duty of preparing this plan, there must remain many differences of opinion as to the several component parts, both large and small, comprised in the final result. Such is here the case. While a clear majority of us, although not always the same majority, have agreed as to each part of the plan proposed, not all of us have agreed as to all its parts, but all concur in the result.

Some of us deem it helpful now to express individual views as to parts of the plan. Others feel that their individual expressions may usefully be deferred until the time for action, looking toward the ultimate effectuation of actual consolidations as provided by the act. Section 5 (5) provides that after we have adopted our plan, as we here do, we may, either upon our own action or upon application, reopen the matter for such changes or modifications as in our judgment will promote the public interest. Such applications will afford opportunity for further consideration upon adequate and recent records of the various parts of the plan.

Following the publication of this opinion the representatives of the Pennsylvania, Baltimore & Ohio, Chesapeake &

Ohio-Nickel Plate and New York Central systems have had a number of conferences on this subject. The suggestion of the Commission contained in the above quotation that changes and modifications might be approved by the Commission as promoting the public interest has led to an attempt to provide within the limits of a four-party plan the allocation of nearly all the properties in accordance with what we conceive to be the principles followed by the commission in its five-party plan.

As a result of these negotiations an agreement covering the allocation of the principal carriers in the eastern group (excluding New England) has been reached. This agreement is inter-dependent and could not have been reached upon any different basis of allocation. Probably no single one of the groups herein proposed is exactly what those interested in such group would wish to be. In order to reach a common understanding it has repeatedly been necessary for all of the interests involved to make concessions. It is believed, however, that each of the systems resulting from the grouping we suggest will be able to operate efficiently, maintain its credit and serve the public better than the same amount of mileage operated in a less coordinated manner as at present.

The General Plan

The general understanding as to the allocation of large railroads in the Eastern district into four systems is as follows: To the New York Central—the Delaware, Lackawanna & Western Railroad and a direct connection with the Virginian Railway at Deepwater, including joint rates and routes over that railway; to the Pennsylvania—the Wabash, the Detroit, Toledo & Ironton and the Norfolk & Western; to the Baltimore & Ohio—the Ann Arbor Railroad, the Reading and Central Railroad of New Jersey, the Western Maryland, the Buffalo, Rochester & Pittsburgh, the Buffalo & Susquehanna, the Lehigh & Hudson River and the Chicago & Alton; and to the Chesapeake Ohio-Nickel Plate System—and to the Hocking Valley will be added, the Erie Railroad, the Bessemer & Lake Erie, the Pere Marquette, the Wheeling & Lake Erie, the Chicago & Eastern Illinois and the Lehigh Valley, with certain rights to the Pennsylvania on the Lehigh Valley. The Grand Trunk Western lines are to continue with the Canadian National Railways.

The general plan will recommend the assignment of the following railroads to the four systems jointly, viz: Lehigh & New England, Delaware & Hudson, Monongahela, Montour, Pittsburgh & West Virginia and Pittsburgh, Chartiers & Youghiogheny.

The right to the use by the Pennsylvania of trackage on the Nickel Plate between Ashtabula and Brocton, and the disposition of the Virginian, are now in process of determination or adjustment.

Conferences Will Be Continued

Conferences in connection with the four-system plan will be continued for the purpose of dealing with the short-line railroads, and various trackage and terminal grants essential to round out the four systems. The present open gateways on all railroads are to be maintained.

It will be our purpose, as soon as practicable, to present this matter to the commission in a definite way to the end that the commission may, as indicated in the foregoing quotation, reopen the matter for such changes or modifications as in its judgment will promote the public interest.

The commission held a conference on the subject on January 3, after which it made public a brief letter signed by Secretary McGinty acknowledging receipt of the letter of the railway executives and stating that it was assumed that it was "written to the commission at this time for its information." There has as yet been no definite announcement as to how soon the formal applications and the various motions required will be filed.

Some Features of the Plan

The Lackawanna was alloted to the Chesapeake & Ohio-Nickel Plate System in the commission's plan, which placed the Virginian with the New York Central. It was at first reported that the plan had divided the Virginian between the C. & O. and the N. & W., but the letter to the commission indicated that the matter had not been definitely settled. There was also a suggestion that the question of trackage rights for the Pennsylvania over the Nickel Plate was to be arbitrated, possibly by some one appointed by the President, but it appeared later that an agreement might be reached.

The plan allows the Pennsylvania to retain the Norfolk & Western, which it has practically controlled for a long time, and also the Wabash, assuming that the commission will vacate its Clayton law order directing that the Pennsylvania and Pennsylvania Company divest themselves of all stock of the Wabash and Lehigh Valley. The Pennsylvania is also to have access to certain centers such as Allentown and Bethlehem, Pa., over the Lehigh.

The commission also will be asked to set aside its order directing the B. & O. to give up its stock in the Western Maryland and also its similar order as to the Wheeling & Lake Erie, the majority stock of which is owned by the Nickel Plate but held by a trustee subject to the commission's ultimate decision as to its disposition.

Under the five-system plan rival applications for control of the W. & L. E., the Pittsburgh & West Virginia and the Western Maryland had been submitted to the commission by the P. & W. V. interests and also by the Wabash. The new plan provides for joint control of the P. & W. V.

Under the plan both the B. & O. and the Pennsylvania would have lines across the Mississippi river to Kansas City. The B. & O., in addition to direct control of the Reading system, would be given access to Michigan territory through the Ann Arbor, the Van Sweringen system would have an entrance to Pittsburgh over the P. & W. V., and both the B. & O. and the Van Sweringen lines would be given an approach to New England territory via the jointly controlled bridge routes. The New York Central has its own line to New England in the Boston & Albany and the Pennsylvania has close working arrangements with, as well as stock interests in, the New Haven and Boston & Maine.

Monon Not Mentioned

Very little has been said so far as to what arrangements have been made for the purchase of the stocks involved. The B. & O. would be given a majority interest in the Reading by the relinquishment of the New York Central's interest. It would have to purchase the Wabash interest in the Ann Arbor. The Van Sweringens would take over the interest of the Pennsylvania Company and the Wabash in the Lehigh Valley and would have to make some arrangement to acquire the Bessemer & Lake Erie from the United States Steel Corporation. They are understood to have acquired or at least to have secured an option on the C. & E. I. The New York Central is supposed to have been buying stock in the Lackawanna but it is not known to have acquired anything like a majority interest. Aside from the properties proposed to be held jointly most of the other roads named in the letter to the commission are already practically within the control of the four systems.

The Chicago, Indianapolis & Louisville, now controlled jointly by the Southern and the Louisville & Nashville, is not mentioned in the letter. The commission allocated it to the B. & O. but after protests had been made by the Southern the B. & O. indicated that it would not press the matter.

Acquisition of control of the Reading system by the B. & O. would make it possible for it to proceed with its long-talked of plan for forming a new short route between Chicago and New York, using the lines of the B. R. & P. and the Buffalo & Susquehanna, and trackage rights over existing lines or new construction between Sinnemahoning and Williamsport, Pa., and the Reading and Central of New Jersey to New York,

which would be shorter than any other route except that of the Pennsylvania and only about 4 miles longer than that.

Access to New England Provided For

While the new plan makes no mention of New England, it has been suggested that it has been so arranged as to make possible an entrance for each of the four systems into New England if a plan should be evolved for the disposition of the New England lines along lines which have been advocated in some quarters, the Pennsylvania using the shore line of the New Haven, the B. & O. its more northerly route, which connects with the Lehigh & Hudson River, the Van Sweringen system the Boston & Maine and the New York Central its Boston & Albany line. There appears no possibility of forcing the New York Central legally to give up the B. & A. or the New Haven to give up its interest in the New Haven but there might be grounds for attacking its interest in the Boston & Maine and the interests of the New York Central and Pennsylvania in New England are sufficient to impose obstacles to any idea of a single New England system.

More Employment—for Lawyers, Accountants, Politicians

While many months will undoubtedly be consumed in the tortuous procedural processes which are necessary to obtain I. C. C. authorization, the fact that the railways have finally reached an agreement after so many years of fruitless negotiations represents the most important step toward accomplishment of the objective of the 1920 law that has been taken in ten years. On the other hand, although the President referred to his interest in the plan at this time as a contribution to business recovery, it would seem that, so far as the next year or so is concerned, the agreement probably holds out more enlargement of opportunity for employment of lawyers, accountants, politicians and newspaper men than for railroad men, since the plan must be approved by the Interstate Commerce Commission before it can become effective and the commission must be persuaded to alter its own pronouncement in favor of five eastern systems.

The agreement represents only the first stage of a long new course of procedure. It is now necessary for the roads to file with the commission specific applications for authority to acquire control of the roads involved, together with terms and conditions, accompanied by motions for a modification of the commission's own plan, and also to ask the commission to vacate the three orders which it has issued in Clayton anti-trust law proceedings directing the present holders to divest themselves of stock of the Wheeling & Lake Erie, Western Maryland and Wabash and Lehigh Valley. It will also be necessary for the plan to run the gauntlet of certain community opposition and probably that of minority stockholders in some instances and to persuade the organizations of employees that their interests have been adequately safeguarded, while the terms and conditions upon which the properties are to be acquired will undoubtedly afford a fertile field for time-consuming scrutiny.

Agreement Follows Years of Effort

The final agreement on a four-system plan is the culmination of efforts on the part of the eastern railway executives extending over a period of seven or eight years to get together on a plan to be recommended to the commission, at its suggestion, as a substitute for the eight systems proposed in its tentative plan in 1921. In 1924 the Baltimore & Ohio, New York Central and Nickel Plate joined in submitting to the commission informally the original "four-system" plan, which was objected to by the Pennsylvania. Then followed several years during which the situation was further complicated by the efforts of L. F. Loree in behalf of a fifth-system plan and the later activities of the Pennsylvania in acquiring control of the Wabash, Lehigh Valley, Detroit, Toledo & Ironton, Pittsburgh & West Virginia, and other strategic roads. Early in 1929 the Baltimore & Ohio and Chesapeake & Ohio tried to force the issue by filing with the commission general applications for its approval of the allocation of various roads to their systems along the lines of the four-system plan and other applications were filed by the Wabash and Delaware & Hudson. Meanwhile the commission had sought to have Congress repeal that part of the law which required it to adopt a complete plan of consolidation but after Congress had repeatedly failed to act it got busy and put out its plan late in the year, favoring a five-system grouping of the eastern roads but including in the fifth eastern system several lines which no one else had ever suggested should be so combined. The Baltimore & Ohio, Chesapeake & Ohio, Wabash and Delaware & Hudson plans were then withdrawn after the commission had announced new rules of procedure indicating that it would no longer entertain applications not accompanied by a showing of the specific terms and conditions on which proposed acquisitions were to be made.

This led to a new series of negotiations among the roads which until recently seemed to have been without results, and a damper was placed on further public proposals of consolidation plans by the efforts of Senator Couzens to have Congress suspend the commission's powers relating to acquisition until Congress could reconsider the whole question.

Daniel Willard Optimistic

Daniel Willard, president of the Baltimore & Ohio, who is understood to have been closely in touch with the President in connection with the agreement, was in Washington on December 31 and conferred with Senator Couzens, possibly for the purpose of trying to show him that many of his expressed fears were groundless, as Senator Couzens has based most of his opposition to consolidation on the idea that any economies to be effected by consolidation must necessarily be "taken out of the hide of labor." In this connection he has frequently quoted a statement made by Mr. Willard to the effect that most economies in railroading must be largely concerned with labor, but he has failed to say much about the explanation Mr. Willard made at the same time that such economies can, and on his road will, be effected without laying men off, simply by not replacing all the men who are continually leaving the railroad service for various reasons. In his testimony before the Senate committee last year Mr. Willard expressed approval of a law or a condition to be imposed by the Interstate Commerce Commission to protect the interests of labor in connection with consolidation and the President's statement showed that an effort had been made in the agreement to safeguard that situation, but some of the very men who criticized the President for prejudging the plan favorably were criticizing it without information as to what it included.

Mr. Willard also paid a short call at the office of Commissioner Meyer, doubtless to give the commission informally some first hand information not too long after it had been furnished to the President. He let it be known that the agreement had not then been reduced to writing and that so far as the Baltimore & Ohio is

concerned the plan would be approached piecemeal, by separate applications for authority to acquire stock control of the various roads involved. Mr. Willard said he knew of no single thing which would contribute more toward stabilization of business and indicated a belief that the plan could be passed on by the Commission in a few months.

Senator Couzens Leads Opposition

Senator Couzens, chairman of the Senate committee on interstate commerce, and the author of the resolution to suspend the commission's power to authorize consolidations, was in conference with the President just before the latter read his statement to the newspaper correspondents, but if the President's purpose was to obtain his support for the plan it failed completely. He first spoke of pressing for passage of the resolution by the House, before which it is now pending in a modified form as reported by the House committee on interstate and foreign commerce, but has apparently recognized the difficulty of doing so in opposition to the President's position. He appeared particularly resentful because the President had chosen to make the announcement himself.

On December 31 he issued a statement referring to the President's statement as "supporting" the plan "in spite of the fact" that the Senate on May 31, 1930, had adopted his resolution by a vote of 46 to 27, with 23 not voting, and that the resolution is now on the House calendar. This, he said, indicated that Congress was not in favor of proceeding with further consolidations until it had had an opportunity to make further investigation, although he did not point out that Congress had been beseeched for five years to make such further investigation. He also referred to the "careful inquiry" which his committee has been making (through the services of an employee during the summer) of what had been accomplished by consolidations, and said that a tentative report will be ready to submit to the committee within a few weeks.

As much of the support for the Couzens resolution came from the representatives of the northwestern states who were trying to prevent the Great Northern Pacific unification, and as the commission has reopened that proceeding, it is difficult to see where Senator Couzens would be able to find as much strength to assist him as he had last spring.

Much of the urge for the passage of the resolution was supplied by the railroad labor organizations that had become worried for fear that consolidations would increase "technological" unemployment, but the President in his announcement said it was his understanding "that the plan provides for the protection of the interests of the employees."

Fearful of Senate, Rather Than President

In any event, after what the President said about the plan, he would naturally promptly veto any such measure as the Couzens resolution if passed. However, the passage of such a resolution by Congress by any big majority even if vetoed by the President would undoubtedly have nearly as much force toward stifling commission action as a law would have. Newspaper writers and others are prone to refer to the commission as being dominated by the President because he appoints the commissioners, but the fact probably is that those who have once been appointed are more fearful of displeasing the Senators, who have power to withhold confirmation or to embarrass the President's appointees by the absurd attacks which are usually brought out in Senatorial investigations.

Senator Couzens said that in his judgment the issuance of the President's statement was "most unethical" and that it is questionable whether the "independent duty" of the commission can now be ascertained because the commissioners owe their positions to the President.

In another statement he said he had received information that the plan "is more the result of high finance than in the public interest" and that "it is reported that some of the high finance practiced by the railroads during the past few years has reacted against their financial interest, that while they should have been endeavoring to operate and manage railroads efficiently they have been really engaged in great financial undertakings, and this proposal is more of a proposal to help them out of their financial difficulties than it is in the public interest." He also gave out a telegram from Clyde Reed, the outgoing governor of Kansas, protesting against the plan.

Fess Replies to Couzens

A reply to Senator Couzens' statement was issued through the Republican National Committee by Senator Fess, of Ohio, also a member of the Senate committee on interstate commerce, and sponsor for the railroad consolidation bill now pending in the Senate, who declared that Senator Couzens' criticism of the President was unjust and that "the President has done an enormous service to the public in securing a forward step in solution of the railway problem." He made the point that the President had "directly followed the desires that Congress has expressed in the law," rather than the one expressed in a resolution which has so far been adopted only by the Senate, and that "he has taken no position on the details of the plan" but has "scrupulously stated" that the plan must be submitted to the commission.

Brookhart Demands Special Session

Senator Brookhart, naturally, was outspoken against the plan and demanded a special session of Congress to take action against it, saying he would introduce a resolution providing for an investigation. Senator Couzens also spoke of the possibility of an investigation by his committee under the resolution authorizing it to make a study of the effect on consolidations or unification, but he said it would require a vote of the committee.

Senator McKellar, of Tennessee, said the President "has apparently in this case taken over the duties of the Interstate Commerce Commission and speaks in advance for that commission. In all events, he prejudges the case for that commission and all the commission now has to do is to put the commission's conclusion into effect."

Senator Goff, of West Virginia, came to the defense of the President by saying that the commission is made up of high-class conscientious men and that before they would permit themselves to be dictated to they would not continue to discharge their function as a commission.

Chairman Parker of the House committee on interstate and foreign commerce, and the sponsor for the consolidation bill now pending, expressed his approval of the plan.

Representative Hoch of Kansas, said that on its face the plan looks like a good one but that Congress is not equipped to pass on its details.

Senator Couzens said that Mr. Willard had assured him that in presenting the case to the commission a memorandum would be attached giving assurance that employees of the B. & O. would not be disturbed by the merger, but the Senator said that he had received

no such assurance from the other roads. He was not satisfied because "in the final analysis there will be hundreds of thousands less railroad workers than now," and said that Mr. Willard "softens the situation by saying that none will be discharged." Senator Couzens also told newspaper men that Mr. Willard had told him that he and the other railway executives had not at first approved of the plan but had acceded to the request of the President, and this was quoted in some papers as a statement that the President had forced the railroads to agree, which caused some amusement among those who have read Mr. Willard's speeches on the subject in recent years.

Coolidge Favors Plan

Ex-President Coolidge has come out with a general expression of approval of the plan, although "cautious Cal" referred to it as a "tentative agreement," representing "over $4,000,000,000" and said that "if the plan is finally adopted" large amounts of business now held in abeyance by the great key industry of transportaion will be transacted and that it will be "a great factor in giving permanent profitable employment."

Labor Leaders Insist on Couzens Resolution

"Labor," the official newspaper of the Standard Railroad Labor Organizations, published statements by D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen, and chairman of the Railroad Labor Executives' Association, and by Donald R. Richberg, counsel for the labor organizations, indicating that they would not be satisfied without further legislation to give the commission power to safeguard the interests of labor. They had not yet, of course, learned the exact nature of the assurances in this direction which the President said he understood the agreement contemplated.

"There are only two ways in which the employees can be protected in railroad consolidations—one through agreements made with their organizations, the other through legislation giving the Interstate Commerce Commission power to protect them," said Mr. Robertson. "The employees have not been consulted and therefore no agreements have been reached as to the projected consolidation. The Interstate Commerce Commission has not the power at present to protect the employees, therefore there can be no valid claim that the interests of the employees are protected in the proposed consolidation."

The President's action in the matter was attacked in speeches in the House on January 6 by two Democrats, Representatives Rayburn, of Texas, and Huddleston, of Alabama, both of whom took the position that the President had at least created the impression that he had prejudged a matter that should be decided independently by the commission, and that it would be difficult for the commission to render an unbiased decision. Mr. Huddleston also attacked the idea of such large consolidations.

THE UNION PACIFIC dedicated its two-story station at La Grande, Oregon, on December 28, when J. P. O'Brien, general manager of the Oregon-Washington Railroad & Navigation Company opened the building to the public.

THE PENNSYLVANIA, on January 6, extended the limits of its Chicago terminal division by including in it 11 miles of line of the Logansport division, from Bernice to Hartsdale, and 11 miles of the Ft. Wayne division between Clarke and Hobart. The territory served by these two sections lies in the industrial district in the east end of the Chicago district.

Motor Transport Hearings at Chicago

THE Interstate Commerce Commission, represented by Examiners Leo J. Flynn and Albert E. Stephan, continued its investigation in docket 23,400, Coordination of Motor Transportation, with a hearing which began at Chicago on January 5. In opening the hearing, Examiner Flynn sketched briefly the conditions which have led to the present investigation. L.c.l. freight traffic, he said, declined from 90,000,000 tons in 1920, to 62,000,000 tons in 1929, while the number of passengers carried by the railways decreased from 1,200,000,000 in 1920, to 780,000,000 in 1929. Motor vehicles are held accountable for much of this loss of traffic. The railroads, said Examiner Flynn, have become increasingly interested in motor vehicle operation, and at the present time the railroad investment in motor vehicles is $21,000,000.

The first railway witnesses were G. N. Harder, general manager of the Escanaba & Lake Superior, and W. T. Carroll, general manager of the Western Allegheny, both short line railroads. They described briefly the extent of motor coach and truck competition in their territories, and testified that their passenger and merchandise traffic has been seriously affected by motor vehicle competition. Mr. Harder said that the passenger traffic of the Escanaba & Lake Superior has practically disappeared.

During the remainder of the first day of the hearing, testimony was taken from witnesses of the St. Louis-San Francisco. W. L. English, supervisor of agriculture and refrigeration, described in detail the findings of an investigation which his department made last year into the extent of trucking in Frisco territory. He told of the loss of much of the fruit and vegetable traffic originating in the Ozark region, saying that the railroad has depended upon this traffic for a substantial part of its earnings and has spent a large amount of time and money in developing it. Ten years ago, said Mr. English, practically all of the fruit and vegetable traffic moving from the Ozark region went by railway, but beginning in 1925, trucks began to handle an increasing amount of this traffic. The distances covered by these truck are generally between 200 and 250 miles, although in some cases fruit and vegetables from the Ozark territory is being carried by truck to San Antonio, Tex., and to certain points in New Mexico, distances of from 650 to 700 miles. In 1920, the St. Louis-San Francisco carried 79 per cent of the Arkansas apple crop, while in 1930, it carried only 14 per cent of the crop. From one important distributing point this year, the entire movement was by motor truck. In the movement of the apple crop, itinerant truckers from outside the apple-growing region bring in their trucks, buy the fruit from the farmers, and haul it to distant markets where the apples are sold. Mr. English estimated the apple traffic handled by the railway will have completely disappeared within two years, if the present rate of decline in this traffic continues.

Likewise, the Frisco has suffered heavy losses in grape, strawberry, and vegetable traffic. The Frisco has been hard-hit by truck competition, said Mr. English, particularly on account of the fact that it originates 72 per cent of its traffic on its own lines. It has also lost merchandise traffic which is trucked into Frisco territory by the trucks which carry out fruit and vegetables. Of the trucks hauling apples, 5 per cent are owned by common carriers, 15 per cent by contract carriers, and 80 per cent

by the itinerant truckers. Of the trucks carrying vegetables, 80 per cent are contract trucks and 20 per cent the trucks of itinerant operators.

The most serious loss suffered by the Frisco, as a result of truck competition, has been that of live stock traffic. At the present time live stock is being shipped by truck to stockyards on the Frisco Lines from points as distant as 200 miles. This livestock is handled largely by contract truckers and farmers, about one-third of this traffic moving in contract trucks and two-thirds in private trucks. The testimony of Mr. English indicated also that the Frisco has suffered similar losses in traffic in packing house products, cream, butter, poultry, and eggs.

Practices of Truck Lines

The next witness was B. H. Stanage, traffic manager of the Frisco, who described an investigation he had made into the trucking situation in Frisco territory. He said that there are four classes of truck operators: Common carriers, contract carriers, itinerant truckers, and wholesalers, jobbers and merchants who own and operate trucks. Of the total number of trucks operating in Frisco territory, he estimated that 10 per cent are operated by common carriers, 30 per cent by contract carriers, 20 per cent by the itinerant truckers, and 40 per cent by the wholesalers, jobbers and merchants. Describing the operating methods of the truck lines, Mr. Stanage said that they do not observe the railroad freight classifications and have only minor packing requirements; that the truck lines accept the weight on shipments as given to them by the shippers; that they choose the freight which they will handle, instead of handling all kinds of freight; that they do not make their rates conform to any standard; and that their rates are unstable and not based upon the service performed nor the length of haul. Neither are the truck rates the same to all shippers, special rates being given for tonnage when it is offered in volume. Mr. Stanage submitted several exhibits showing comparisons of motor truck and railway rates between many points in Frisco territory. It is a common practice, he said, for the truck lines to cut their rates in half in order to attract return loads to their trucks.

The next witness for the Frisco was H. W. Press, assistant to the comptroller, who filed an exhibit showing the railway's passenger traffic and income statistics in recent years.

J. E. Hutchison, who retired from the position of vice president in charge of operation of the St. Louis-San Francisco on January 1, and who is now a special representative to the president, took the stand to testify concerning the need for regulation of the motor coach and truck lines. The motor vehicles are free to operate when and where they please, said Mr. Hutchison, fixing their rates at any level necessary to get business. The railroads, on the other hand, are bound by rules and regulations. In Mr. Hutchison's opinion, truck rates should be higher than railroad rates to cover the extra service of store-door collection and delivery. He also testified in favor of the application of railroad operating rules and regulations to the motor vehicle lines. The motor coach and truck lines should pay a reasonable amount for their use of the highways, said Mr. Hutchison. The government can be of material assistance by passing laws putting the highway operators under the same regulatory provisions as the railways, and requiring them to handle all traffic offered except heavy bulk commodities. He stated further that unless private and contract carriers are similarly regulated any national program of motor vehicle regulation will be defeated.

Under examination by the commission, Mr. Hutchison stated that, in his opinion, the cost of handling freight by truck would be found to be greater than the cost of handling it by railroad, if all of the costs which should be paid by the trucks were included. He contended that the truck lines should increase their rates or the railroads should lower their rates in order to equalize them, and that the trucks should charge extra for the store-door collection and delivery service. Mr. Hutchison was examined at length by counsel for the Pickwick-Greyhound Lines, concerning taxation and regulation of the motor vehicle lines in Missouri.

Southwestern Roads to Render Store-Door Service

The last witness for the Frisco was J. R. Koontz, vice president in charge of traffic, who testified concerning what he considered to be the remedies of the present situation. The motor trucks, said Mr. Koontz, are securing merchandise traffic on account of the convenient service which they offer. The southwestern lines, he said, have practically agreed on a program under which all of them will provide pick-up and delivery service.

Strict regulation of the steam railways has caused them to lose their initiative to a large extent, said Mr. Koontz. As a result the railways are not in a position to meet quickly new competitive situations. The remedy of the present situation, he said, is proper regulation of the railways' competitors. The railways, he said, are not attempting to obstruct evolution in transportation, but they want an equal opportunity with their competitors, and want also to be permitted to use their initiative to a greater extent than they now do.

With respect to the plan to provide store-door collection and delivery service, Mr. Koontz estimated that this might recover 50 per cent of the merchandise traffic which has already been lost. At the same time, it is expected that this plan will enable the railways to retain the merchandise traffic which they now handle, but which they might well lose in the future were they not to provide the store-door collection and delivery service.

The first witness for the Illinois Central was J. F. Porterfield, general superintendent of transportation, who described the steps taken by the Illinois Central to offset its decreasing passenger business. He stated that 132 unremunerative passenger trains had been discontinued, effecting a decrease of 12.7 per cent in passenger train miles. Rail motor cars have been substituted for 12 trains, saving approximately $39,000 a year. Mr. Porterfield described the operation of a motor coach by the Central Transportation Company, a subsidiary of the Illinois Central, between Waterloo, Iowa, and Dubuque. This motor coach operation has enabled the railway to discontinue two passenger trains, saving approximately $33,000 a year. The revenues of this motor coach operation have been more than sufficient to pay the operating expenses. On January 1, 1931, said Mr. Porterfield, similar motor coach service was established between Waterloo, Iowa, and Fort Dodge. It is estimated that the takng off of two trains on this run will save the railroad approximately $37,000 a year.

Mr. Porterfield testified further concerning the differences between what the motor coach pays for its right of way and what the railway pays. On the Illinois Central, maintenance expenses have taken from 11 to 13 per cent of the gross revenues, taxes approximately 6 per cent of the gross revenues, and the interest on the investment in the right of way, 13 per cent of the gross revenues, making a total of approximately 30 per cent of its revenues which the railway pays for its roadway. The Illinois Central motor coach, however, pays only approximately 10 per cent of its gross revenues in taxes, excepting the gasoline tax, or approximately 13 per cent of its gross revenues in taxes including the gasoline tax.

Examiner Flynn asked Mr. Porterfield if, in his opinion, the substitution of motor coach service for train service had been satisfactory and profitable. Mr. Porterfield answered in the affirmative, stating that it had proved satisfactory to patrons and had enabled the railway to reduce its expenses.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the 52 weeks ended December 27 amounted to 45,887,413 cars, as compared with 52,827,925 cars in 1929, 51,589,887 in 1928, and 53,098,819 cars in the peak year of 1926. The last year in which the loading was less than in 1930 was 1922, when the total was 43,207,561, and in the 1920 the loading was almost as great as in 1930. In that year it was 45,118,472 cars.

The 1930 loading represented a reduction of 6,940,512 cars or 13.1 per cent under the number loaded in 1929 and a reduction of 5,702,474 cars or 11.1 per cent under 1928.

Total loadings by commodities for 1930 compared with 1929 follow:

	1930	1929
Grain and Grain Products	2,265,925	2,396,195
Live Stock	1,285,245	1,419,191
Coal	7,951,868	9,095,271
Coke	487,152	634,427
Forest Products	2,368,419	3,248,408
Ore	1,664,725	2,281,566
Merchandise less than carload lot freight	12,201,445	13,205,698
Miscellaneous freight	17,662,634	20,547,169

For the week ended December 27 the total was 538,419, a reduction of 100,970 cars as compared with the corresponding week in 1929 and of 129,555 as compared with 1928. In the week ended December 20 the total was 713,810, a decrease of 128,965 cars as compared with 1929 and of 186,810 as compared with 1928. The summaries for the two weeks, as compiled by the Car Service Division of the A.R.A., follow:

Revenue Freight Car Loading

Week Ended Saturday, December 27, 1930

Districts	1930	1929	1928
Eastern	121,878	151,241	156,723
Allegheny	108,026	135,715	142,386
Pocahontas	28,175	31,335	28,172
Southern	78,046	86,351	91,051
Northwestern	63,475	78,066	79,355
Central Western	92,365	103,492	109,658
Southwestern	46,454	53,189	60,629
Total Western Districts	202,294	234,747	249,642
Total All Roads	538,419	639,389	667,974
Commodities			
Grain and Grain Products	27,172	31,584	37,091
Live Stock	17,739	17,220	21,499
Coal	117,407	135,950	119,095
Coke	7,638	10,943	10,271
Forest Products	20,693	27,837	32,808
Ore	4,281	6,407	8,378
Mdse. L. C. L.	167,354	187,249	192,853
Miscellaneous	176,135	222,199	245,979
December 27	538,419	639,389	667,974
December 20	713,810	842,775	900,620
December 13	744,443	922,861	963,668
December 6	787,173	933,309	984,773
November 29	702,085	836,310	900,556
Cumulative total, 52 weeks	45,887,413	52,827,925	51,589,887

Week Ended Saturday, December 20, 1930

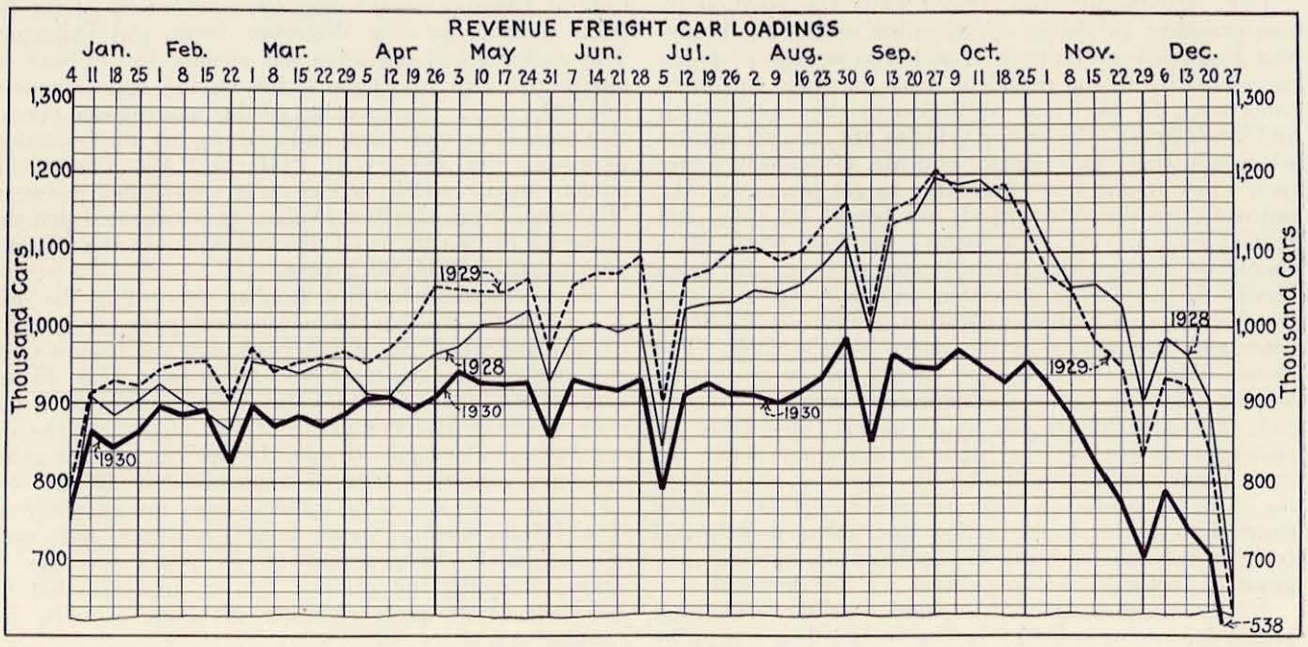
Districts	1930	1929	1928
Eastern	158,551	182,378	203,162
Allegheny	138,738	174,875	187,284
Pocahontas	44,260	57,696	54,618
Southern	111,968	132,717	140,135
Northwestern	83,984	97,324	100,565
Central Western	114,171	127,353	137,729
Southwestern	62,138	70,432	77,127
Total Western Districts	260,293	295,109	315,421
Total All Roads	713,810	842,775	900,620
Commodities			
Grain and Grain Products	36,049	36,195	43,175
Live Stock	22,742	24,416	26,318
Coal	161,522	199,669	192,018
Coke	8,492	11,365	10,662
Forest Products	31,218	48,771	58,329
Ore	5,743	8,794	10,945
Mdse. L. C. L.	210,264	228,536	242,578
Miscellaneous	237,780	285,029	316,595

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended December 20 totalled 47,494 cars, a decrease from the previous week of 2,738 cars and a decrease from the same week last year of 6,585 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
December 20, 1930	47,494	27,226
December 13, 1930	50,232	29,820
December 6, 1930	54,577	30,032
December 21, 1929	54,079	32,111
Cumulative Totals for Canada		
December 20, 1930	3,110,097	1,681,022
December 21, 1929	3,482,515	2,056,131
December 22, 1928	3,651,129	2,014,263

The freight car surplus in the week ended December 15 reached the record-breaking figure of 616,931 cars, an increase of 24,086 cars as compared with the preceding week, and in the week ended December 23 this figure rose to 649,314 cars, including 347,780 box cars, 231,144 coal cars, 29,597 stock and 14,598 refrigerator cars.



Chicago & Eastern Illinois Changes Executives

Charles T. O'Neal of the Buffalo, Rochester & Pittsburgh succeeds Thomas C. Powell as president

THE position of chairman of the board of directors of the Chicago & Eastern Illinois, which has been vacant since the resignation of John W. Platten in 1928, was filled on January 1 by the election to that office of Thomas C. Powell, president for the past five years. At the same time Charles T. O'Neal, vice president in charge of operation of the Buffalo, Rochester & Pittsburgh, was elected president of the C. & E. I. to replace Mr. Powell. These changes do not affect William J. Jackson, former president, who continues in the capacity of chairman of the executive committee.

Mr. O'Neal assumes the presidency of the Chicago & Eastern Illinois at a time when, in common with other coal-carrying roads in the Central West, its revenues have been seriously depleted by the decline in the bituminous coal traffic. The C. & E. I. derived 49.2 per cent of its total revenue tonnage from the handling of bituminous coal in 1926, while in the same year products of mines made up 59.8 per cent of the total tonnage. In 1929, products of mines constituted 54.5 per cent of the revenue tonnage, while 42.7 per cent of the total tonnage was made up of bituminous coal. The tonnage of mine products declined during this period from 8,644,499 in 1926, to 6,771,516 in 1929.

Thomas Carr Powell

Largely because of the decrease in the coal traffic in the southern Illinois and Indiana fields, the total tonnage handled dropped from 14,467,954 in 1926, to 12,418,495 for the year 1929. A similar loss of forest product and agricultural product tonnage was partially offset by an increase in the tonnage of animals and their products and in the tonnage of petroleum and petroleum products.

Charles T. O'Neal

In spite of this loss of traffic, the improvement in the operating ratio which began during the first year of the return of the railroads to private operation, 1920, when it was reduced from 97.22 in 1929 to 95.07, has continued through the five years of Mr. Powell's service as president. The operating ratio was 83.10 in 1925, 80.02, 80.59 and 78.02 respectively in each of the succeeding years and 77.53 in 1929. While total operating revenues have declined from $28,251,751 in 1926 to $25,398,275 in 1929, the net operating income has decreased only from $2,608,542 to $2,209,033 in 1929.

The expenditures for maintenance of the fixed property of the railroad, while not large, have been commensurate with the traffic which the road has been called upon to handle, and, probably more important, have varied only slightly during the past four years from an average of 14.6 per cent of the total expenses. Eighty-nine miles of 110-lb. rail were laid in 1928 and 1929, representing the first use by the C. & E. I. of rail of greater weight than 100-lb.

A new locomotive terminal and shops were placed in service during 1927 at Wansford (Evansville), Ind., representing an expenditure of nearly $600,000. A portion of this expenditure was for yard tracks which will eventually become a part of a projected classification yard at Wansford.

Soon after Mr. Powell became president of this company, negotiations were begun for the acquisition of the Chicago Heights Terminal Transfer and its purchase was completed on August 1, 1927, providing the Chicago & Eastern Illinois with facilities for interchange with the Michigan Central, the Chicago, Milwaukee, St. Paul & Pacific, the Elgin, Joliet & Eastern and the Baltimore & Ohio Chicago Terminal and industrial trackage serving about 100 industries, as well as acreage suitable for the location of new industries. The C. & E. I. further improved its terminal facilities during Mr. Powell's regime by securing admission to membership in the Terminal Railroad Association of St. Louis serving St. Louis, Mo., and East St. Louis, Ill.

Operating Characteristics

The Chicago & Eastern Illinois operates in a highly competitive territory, between Chicago and the Mississippi river at St. Louis, and the Ohio river at Evansville, and the acquisition of adequate terminal facilities is highly important to the very existence of such a road. During a period in which less than carload lot traffic in that territory has suffered from the inroads of highway transportation agencies, Mr. Powell has effected an increase in the tonnage handled by the C. & E. I. While the tonnage increases obtained by the road have not been large, they have been among commodities which move under relatively higher freight rates than those which are derived from coal and similar low grade commodities.

The action of the Van Sweringen interests in exercising their option to purchase a controlling interest in the Chicago & Eastern Illinois during October, 1929, coupled with the allocation of the road to the Chesapeake & Ohio-Nickel Plate System following the four-party consolidation plan conference at New York, has led to the belief that Mr. O'Neal was elected president at the behest of the new purchasers. Under the new agreement among the four trunk lines, the C. & E. I. has been removed from the Chicago & North Western System, to which it was assigned under the Interstate Commerce Commission consolidation plan.

Mr. O'Neal has had extended experience on railroads in the East whose traffic is mainly derived from coal, and he comes to the road with an able knowledge of coal handling. At the same time one of the needs of the road is the development of a diversified traffic. Mr. O'Neal will undoubtedly continue the steps taken toward that end by Mr. Powell.

Thomas Carr Powell

Mr. Powell has been in railway service for 46 years, during that time attaining a name as traffic expert of more than average ability. Immediately following the termination of federal control of the railroads, as vice-president in charge of traffic of the Erie, he had a leading part in the campaign waged by that road for new business.

He was born on September 5, 1865, at Cincinnati, Ohio, and attended a private school at Brooklyn, N. Y., public schools at Dunellen, N. J., and Cincinnati and Woodward High School in the latter city. He obtained his first railway experience as a traffic mail clerk on the Cincinnati, New Orleans & Texas Pacific (Now part of the Southern), serving on that road in that capacity and as rate clerk, chief rate clerk, chief clerk to the traffic manager and assistant general freight agent until 1895. He then was advanced to general freight agent. In 1899, he was advanced to assistant freight traffic manager, and in 1902, to freight traffic manager, the former position with headquarters at Louisville, Ky., and the latter at Washington, D. C.

In 1905, Mr. Powell was elected vice-president of the Western lines of the Southern, with headquarters at St. Louis, a position he held until 1918, also serving from 1907, when his headquarters were removed to Cincinnati, to 1918, as vice-president of a number of subsidiary companies which are now an integral part of the Southern. Several months after the declaration of war with Germany, in 1917, he became a member of the priorities committee of the War Industries Board and in 1918, he was appointed manager of inland traffic of that board and special representative of the United States Railroad Administration in relations with it. Early in 1919, he was appointed director of the Division of Capital Expenditures of the Railroad Administration, later serving as a member of the Claims committee and as a member of the Industrial Board appointed by President Wilson. Upon the return of the roads to private control in 1920, he was elected vice-president of the Erie, in charge of traffic and development, with headquarters at New York, becoming president of the Chicago & Eastern Illinois on August 1, 1925.

Charles T. O'Neal

Mr. O'Neal comes to the C. & E. I. with 40 years of varied railway experience. He was born at Brandywine Springs, Del., and attended the Wilmington, (Del.) public schools and Goldys Business College. He entered railway service in 1890, as a clerk on the Philadelphia & Reading (now the Reading). In the following year he entered the service of the Lehigh Valley, acting in various capacities until 1903, when he was advanced to trainmaster on the Pennsylvania division of that road.

He was transferred to the New Jersey & Lehigh division in 1905, and in 1906, was promoted to superintendent of the New York division, where he remained until 1908, when he was transferred to the Buffalo division, acting also as superintendent of the Lehigh Valley Transportation Company. During 1917, and 1918, Mr. O'Neal served successively as general superintendent, assistant vice-president and marine manager of the Lehigh Valley.

He was appointed manager of terminals of the railroads entering the Niagara frontier for the Railroad Administration in 1919, and in the same year was commissioned as a major in the United States Army. During 1920, he was located at Washington as a member of the Railway Board of Adjustment, Division of Labor, U. S. R. A., and as assistant to the director general of railroads in the settlement of claims arising out of federal control. He then became receiver of the Fort Smith & Western in 1921, and was elected vice-president of that line in 1923, both with headquarters at Fort Smith, Ark. Mr. O'Neal was appointed general manager of the Buffalo, Rochester & Pittsburgh in March, 1929, and has been vice-president in charge of operation since June of that year.

SHIPMENTS OF FISH from the lakes in northern Saskatchewan are now made regularly by airplane to Prince Albert whence they can be taken by rail to the markets of Eastern Canada and the United States. Of whitefish and trout, about 3,000 lb., are taken out daily in two trips. The service is to be increased so that 6,000 lb. can be delivered daily to the railroads.

Barge Line Traffic Reduced by Low Water

WASHINGTON, D. C.

A DECREASE in the traffic of the Inland Waterways Corporation in the first nine months of 1930 as compared with that of the previous year was attributed to "the most extensive drought ever in the history of the Mississippi river" in testimony by Gen. T. Q. Ashburn, chairman of the board of the corporation, before a sub-committee of the House appropriations committee just made public. Gen. Ashburn said there had been a constant increase in the tonnage offered but that there were periods during the year when it was absolutely impossible to navigate even down below St. Louis and Memphis. For the months from January to September the tonnage carried on the lower river, he said, was 856,308, as compared with 997,573 in 1929; on the Warrior river division it was 158,803 tons in 1930 as against 185,713 in 1929, and on the upper Mississippi it was 84,307 tons as compared with 86,194 in 1929.

Gen. Ashburn put into the record a profit and loss statement showing a net loss for the corporation and its subsidiaries, for the period June 1, 1924, to September 30, 1930, of $587,214, but he objected vigorously to the use of this figure as representing the results, saying that it represented the charging to expenses of the loss written off in connection with the retirement of property which cost the corporation nothing but which had been taken into its accounts at appraisal figures, as required by the Interstate Commerce Commission accounting regulations. He also put into the record a table comparing the operating revenues and operating expenses from 1925 to 1929 showing a net operating income of $409,461, or an average of $81,892 a year, on the basis of which he said "it is not costing the government anything to operate the Inland Waterways Corporation. It operates on its own funds received from operation." He also said the investment in property and equipment had been depreciated by $2,646,757, which had been included in operating expenses.

Six general conditions which he said must be fulfilled "before there can be any successful amount of traffic carried upon our rivers by common carriers" were mentioned by General Ashburn, with a statement that he though "four and a half" of these objectives have now been practically reached, and that "after they have been successfully solved I do not think there is any question but what the government ought to step out of the business of water transportation, because private capital can and will invest safely."

"In the first place," he said, "there must be suitable navigable streams; second, there must be suitable boats, designed to meet the conditions of the various streams upon which operations are carried on; third, there must be suitable interchange terminals; fourth, there must be properly balanced freight; and there must be relations with the railroads as to joint routes and rates, and then there must be an equitable division of the accruing revenues for joint service performed.

"I think four and one-half of those objectives have been practically completed, and there remain to be completed only one and one-half.

"Only a few of our rivers are completely navigable, and even those that are supposed to be completely navigable, have had some very low water in them during the long-sustained drought of 1930. Congress has already authorized the appropriation of certain funds for these and other projects, although the money has not been appropriated.

"The corporation has designed standard towboats and standard barges, which are now in operation. Practically in every place where we have asked the cities to build terminals they have been built. The balanced freight has developed to a very large extent. As a matter of fact, this summer we have had more freight offered us both up and down the streams than we could have carried even if we had not been compelled to operate at about 60 per cent of our efficiency due to low water.

"We have a great many joint routes and rates, and we are asking for more. There is no great objection on the part of the railroads to give us joint routes and rates.

"The condition which has not yet been evolved but that is gradually being evolved, is in reference to a determination of an equitable division of the accruing revenue between the rail and water carriers for joint service performed."

He also said he had been approached by the president of "one of the two roads that parallel the Mississippi river" about "taking over the barge line" and that he had said: "we could practically control all the traffic, and we would willingly buy your line ourselves and operate it." General Ashburn said he had then asked the railroad president "Suppose we sold out to your competing line and let it operate the barge line?" to which he had replied: "Oh, no; that would never do." The general thought that "throws a spot-light" on the proposal that the law be amended to allow railways to operate on the inland waterways.

Increased Rates for Alaskan Road

(Continued from page 146)

months ended June 30, 1930, as compared with the corresponding period of 1929.

There being no promise of an early increase in traffic on the Alaska Railroad, the only present possibility of materially reducing its annual deficits is to increase the passenger and freight rates. Therefore the select committee of the Senate composed of Senators Howell, Kendrick, and Thomas appointed to investigate the affairs of the railroad recommends, among other things, an immediate increase in the passenger rate from 6 to 10 cents per mile and a general increase in freight rates sufficient to afford an increase in freight revenue of 50 per cent.

The freight rates on the three Alaska railroads would then be:

White Pass Railroad, 420 per cent higher than in the states; Copper River Railroad, 251 per cent higher; and the Alaska Railroad, about 95 per cent higher.

The first schedule of freight rates established for the Alaska Railroad was 100 per cent higher than in the states. Subsequently the rates in the states were raised while the rates on the Alaska Railroad were reduced. The increase recommended does not quite reestablish the relation of these rates that was initially deemed necessary.

The arguments advanced against this proposed increase are largely based upon the asserted obligation of the government to develop Alaska. However, the policy of maintaining the present inadequate traffic rates has not been justified by results, inasmuch as the total increase in population during the past 10 years within the 50,000 square miles of territory tributary to the railroad has been less than 1,200, at a cost to the government—due to the railroad's deficits alone—of some $10,000,000; that is, about $800,000 for each 100 persons domiciled in that region since 1920.

The recommendations of the committee in detail are:

(1) That the railroad be not abandoned but its operation be continued.

(2) That its train mileage be reduced approximately 100,000 miles as compared with that of the fiscal year of 1930.

(3) That that business efficiency which is inseparable from successful management, and of which the railroad has not always been the beneficiary, be enforced, together with strict economy and the husbanding of every resource.

(4) That passenger rates be increased from 6 to 10 cents per mile, together with a revision of freight rates so as to provide at least 50 per cent more revenue, as an average, on all freight handled than can be obtained under the schedule of the freight rates now in effect, and that $1,000,000 appearing in the pending appropriation bill of the Interior Department be allocated as follows: $500,000 to cover deficit in operation; $250,000 for the investigation of mineral and other resources of Alaska, to ascertain the potential resources available which will affect railroad tonnage; and $250,000 for capital improvements.

(5) That this committee be continued or another committee be appointed to keep the Senate informed respecting the progress of the railroad and the details of operation during 1931.

Looking Backward...

Fifty Years Ago

During the year 1880, 7,307 miles of new railway lines were constructed in the United States by 234 different companies. This constitutes the largest mileage constructed in any one year since 1871. The largest amount of mileage was completed in Dakota Territory and in Texas where more than 650 miles of lines were constructed in each.—*Railway Age,* January 6, 1881.

The railroad commissioners of Kentucky, without resorting to arbitrary legislation, have been able to induce railway companies of that state to reduce their passenger rates from 4 and 5 cents a mile to a maximum of 3 cents. The Louisville & Nashville, which owns about one-third of all the roads in the state, will adopt the rates voluntarily. The Louisville, Cincinnati & Lexington [now part of the Louisville & Nashville] announces a 3-cent rate taking effect January 1. There is a growing impression among railway managers that 3 cents a mile, even in comparatively thinly populated regions, may prove more profitable than a higher rate.—*Railway Age,* January 6, 1881.

Twenty-Five Years Ago

The Indiana Harbor [now part of the New York Central] has just been completed from Indiana Harbor, Ind, south to Danville, Ill., 109 miles, giving the New York Central Lines direct access to the coal fields of Southern Illinois. The Indiana Harbor during the past year purchased from the Michigan Central its lines in the Calumet district and an operating contract over the Chicago Junction which provides it with a complete belt line from Indiana Harbor, East Chicago and Hammond, south of Chicago, to Franklin Park, on the west side of Chicago, 65 miles.—*Railway Age,* January 12, 1906.

Elisha Lee, assistant division engineer on the Pennsylvania at Buffalo, N. Y., has been appointed assistant engineer at Philadelphia, Pa., with supervision over terminal yards. George R. Martin, formerly general auditor of the Great Northern, and subsequently assigned to special work in the president's office, has been appointed assistant comptroller of that road, with office at St. Paul, Minn. W. K. Etter, trainmaster on the Atchison, Topeka & Santa Fe at Topeka, Kan., has been appointed acting superintendent at San Marcial, N. M., succeeding James Kurn, who has been appointed acting superintendent of the New Mexico division. —*Railway Age,* January 12, 1906.

Ten Years Ago

The unprecedentedly large increases in freight and passenger rates which became effective on August 26 have failed thus far to produce the desired and expected effect on either the operating revenues or the net operating income of the railroads as a whole.—*Railway Age,* January 7, 1921.

Car and locomotive prices reached a peak in 1920. Prices paid for locomotives in that year were two and one-half times the average prices for the years 1910-1914; for all-steel freight cars, three times; for freight cars of composite construction more than three times, and for passenger coaches more than twice.—*Railway Age,* January 7, 1921.

R. C. Vaughn, assistant to the president of the Canadian National, has been appointed vice-president in charge of purchases and supplies. W. H. Penfield, engineer of track of the Chicago, Milwaukee & St. Paul, has been promoted to engineer maintenance of way. Edward G. Smith, assistant treasurer of the Union Pacific, has been appointed treasurer. G. W. Boschke has been appointed assistant chief engineer of the Southern Pacific, Lines West of Ogden, El Paso and Portland, with headquarters at San Francisco, Cay.—*Railway Age,* January 7, 1921.

New Books...

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Belgian-Luxemburg Iron and Steel Industry, by Addison E. Burrows. Production of rails and railway material 1925-1928, p. 12 Export trade figures 1926-1929, p. 16, 18. The historical background (Roman invasion of Gaul to present) and the discussion of employment may also be of interest. Trade Information Bulletin No. 736. 19 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. 10 cents.

Centennial History of South Carolina Railroad, by Samuel M. Derrick. "This book is an attempt to tell the story of the South Carolina Railroad and to give some of the economic conditions which surround it. It was the pioneer railroad in the South and among the very first in the United States." Preface. Profusely illustrated 335 p. Pub. by The State Company, Columbia, S. C. $5.00.

Periodical Articles

Highways of the World—Annual Statistical Survey of Mileages, Types of Construction, and Expenditures, by B. P. Root. The third of a number of surveys, the first for 1928 being published in Commerce Reports for Nov. 19 and Dec. 10, 1928, and that for 1929 being published in Commerce Reports, January 13, 1930. Commerce Reports, January 5, 1931, p. 3-9.

Industrial Revolutions, by Watson Davis. "History as it used to be taught in the schoolbooks was largely a matter of kings and queens, generally and battles .... Napoleon set Europe aflame, but history may well give a more lasting place to the inventor or inventors of the match .... Scientists and technologists, 'industrial revolutionists,' dead and living, are the individuals who are remaking our civilization...." Thirty-six individuals and several groups such as the research engineers in the Bell Telephone Laboratories and various groups of chemists are listed on pages 78-79. Scientific Monthly, January, 1931, p. 76-80.

The Job of Getting a Job, by William S. Dutton. An interview with President Loree of the Delaware & Hudson who discusses what you owe your boss and what he owes you. American Magazine, January 1931, p. 34-35, 100-102.

Opening of International Bridge Between Texas and Chihuahua, by William P. Blocker. "Another international railway link was completed on November 1, 1930, when the Atchison, Topeka & Santa Fe Railway rails met those of the Kansas City, Mexico & Orient Railway at the center of the bridge spanning the Rio Grande between Presidio, Texas, and Ojinaga, Chihuahua...." Commerce Reports, January 5, 1931, p. 53.

Our Railroads in the Next Ten Years, by Claude R. Porter. A consideration of present day railway problems by a member of the Interstate Commerce Commission. Nation's Business, January, 1931, p. 20-22, 64-72.

Speed Records of French Railroads, by Thomas Butts. "The maximum authorized speed being as yet limited to 120 kilometers (74½ miles) per hour, these commercial speeds can be attained only by maintaining the extremely high speeds of 90 kilometers (nearly 56 miles) on inclines of 5 millimeters (nearly two inches) and 110 to 120 kilometers (68-1/3 to 74½ miles) on the flat sections...." p. 54. Commerce Reports, January 5, 1931, p. 53-54.

Ten Years from Now, by Norman Bel Geddes. Editor's note states: "Norman Bel Geddes is looked upon today as one of the most daring yet practical originators of new ideas .... It was because of his great interest in social and industrial innovations that we asked him to forecast.... some of the changes of the next ten years." There are three forecasts regarding railroads, and quite a number regarding highway and air transport, working conditions, living conditions generally. Ladies Home Journal, January, 1931, p. 3.

Odds and Ends . . .

Another Mayor

RICHMOND, QUE.

TO THE EDITOR:

For inclusion in some future issue of your publication, may I advise that Guy C. Tillotson, station baggage master at Coaticook, Que., is also mayor of that town.

R. E. LAPORTE,
Superintendent, Canadian National.

Railroading Cat

For 12 years a cat, discovered in a box car and adopted by the freight handlers, faithfully exterminated all rodents at the South Water Street freight station of the Illinois Central in Chicago, saving freight and valuable records. Now that loss of agility has begun to endanger her life among the trucks and other machinery, the cat has been placed on the "pension list"—that is, she has free board and lodging the rest of her life with an employee of the station, Frank Barr of Homewood, Ill.

The Old Romantic Signal System

Romance has gone from railroading. No more does the section foreman's brave daughter save the fast mail and its precious load of humanity from death and destruction in the raging torrent where the bridge has been washed away. In the old days, at least once a week, somewhere, she did so by waving her red petticoat at the engineer. In these times the section foreman's daughter shakes no petticoat at any one. Not only does she possess no such garment, but her figure is so much a la mode that the modern engineer would mistake her for a reed beside the track.—Chicago Daily News.

"Steam-Heated" Highway

With regular motor routes across the Sierra Nevada Mountains in Northern California blocked by heavy snowfall, the only "steam-heated highway" for automobile travel in the United States is again providing safe passage over the snowy 7,000-ft. summit between Sacramento and Reno. Which means that the Southern Pacific's automobile baggage car service has resumed operations for the winter season of 1930-31. Otherwise known as the "snow ferry" over the high Sierras, this innovation in railroading was first offered the motoring public of California and Nevada two years ago. Its success was immediate, and the Iron Trail is now called upon annually for assistance in getting motor cars over the mountain summit in snow time.

New Zealand Grade Crossing Laws

EL PASO, TEX.

TO THE EDITOR:

Japan is not alone in protecting the railways at grade crossings. In New Zealand, the motorist who is hit on a grade crossing is prosecuted for failing to keep a good look-out for trains. Furthermore, if the motorist should cross in front of a train after the crossing whistle has been sounded and the engineman can obtain his license number, the motorist is prosecuted. I might add that if live stock is killed at grade crossings or on the right of way, it is not paid for; in fact, where the owner is known, he is requested to pay the cost of burying the carcass. If we had a law in this country making a motorist responsible at grade crossings, we should soon see a large decrease in the number of fatalities per year at such crossings.

P. D. ANDERSON.

When Royalty Travels by Train

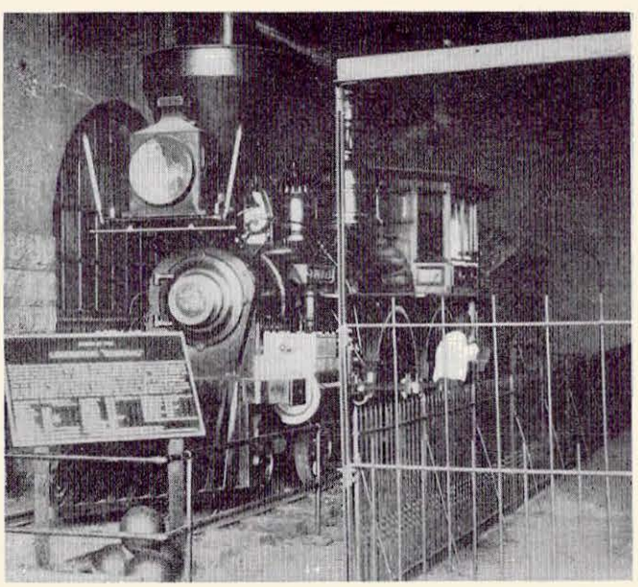
The Star publishes an informative interview with Inspector John Harrison, of the L. & N. E. of Great Britain, who recently retired after 47 years' service, and who was the recipient of a royal gift in the shape of a pair of gold cuff-links. In the course of some interesting remarks, Inspector Harrison incidentally observed:—"Nowadays royal traveling is democratic. The King does not like any fuss and hates to feel that the royal train is interfering with other arrangements. He likes to be regarded as an ordinary first-class passenger. Even if there is a special train, the King wants the least possible interference with other traffic, and does not like trains to be held up on his account. The Prince of Wales always seems to spread a happy atmosphere wherever he goes. On train journeys he sometimes used to play to himself on a ukelele or a banjo."—Railway Gazette.

The Old Engine

Much comment was aroused by the illustration showing the peculiar locomotive, which appeared in the issue of November 22, and nearly 50 letters were received in reply. The following description is culled from the replies received:

This locomotive is the "John Stevens," No. 30 (one of seven) and was built by Norris Brothers of Philadelphia about 1849, for the Camden & Amboy, which is now part of the Pennsylvania. These locomotives were known as "Stevens-Crampton" locomotives. The design originated with Robert L. Stevens, president of the C. & A., the details being worked out by Isaac Dripps, master mechanic. Stevens was also a marine engineer of note and invented the "Stevens cut-off," still used almost exclusively on the beam engines of river steamboats. He was much impressed by the Crampton single-driver locomotives used in England, and he incorporated many of the features of these engines, and of contemporary marine engines, in these locomotives. The cylinders were 13 by 34 in., the drivers 8 ft. in diameter, and the locomotive weighed about 47,000 lb. in working order. The boiler was only 38 in. in diameter. The engines were failures in operation. They were intended for high-speed service, and actually attained high speeds at times, but they could handle only about six of the light wooden cars and were slow in starting, no sand being carried. The engines were deficient in adhesion as well as in steaming capacity and the drivers showed an alarming tendency to leave the rails at unexpected moments. Most of these engines were rebuilt as 4-4-0 type locomotives, with 72-in. drivers and were used in freight service, although one or two of them, as originally designed, were still operating in 1865.

* * *



The Historic Locomotive "General" in the N., C. & St. L. Station at Chattanooga, Tenn.

NEWS

Eleven Months' Net Equals 3.41 Per Cent

Revenues down 15.7 per cent as compared with eleven months of 1929

Class I railroads of the United States for the first eleven months of 1930 had a net railway operating income of $834,510,032, which was at the annual rate of return of 3.41 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the eleven months of 1929, their net was $1,202,707,319 or 5.03 per cent. Operating revenues for the eleven months totaled $4,965,024,236, compared with $5,890,912,371 for the same period in 1929, or a decrease of 15.7 per cent. Operating expenses amounted to $3,678,175,633, or a decrease of 12.4 per cent. Taxes amounted to $334,391,443, a decrease of 11.7 per cent. For November alone, the tax bill amounted to $25,900,547, a decrease of $4,018,132.

Seventeen Class I railroads operated at a loss in the eleven months, of which six were in the Eastern district, two in the Southern and nine in the Western.

Net railway operating income by districts for the first eleven months of 1930, with the percentage of return based on property investment on an annual basis, was as follows:

New England Region	$ 40,350,518	4.65%
Great Lakes Region	129,260,485	2.88%
Central Eastern Region	178,132,388	3.79%
Pocahontas Region	76,704,200	7.23%
Total Eastern District	424,447,591	3.82%
Total Southern District	80,100,211	2.64%
Northwestern Region	90,339,014	2.63%
Central Western Region	163,046,422	3.55%
Southwestern Region	76,576,794	3.39%
Total Western District	329,962,230	3.21%
TOTAL UNITED STATES	834,510,032	3.41%

Class I railroads for November had a net of $62,069,103, which, for that month, was at the annual rate of 2.55 per cent. In November, 1929, their net was $86,640,632, or 3.64 per cent. Operating revenues for November amounted to $398,786,435, a decrease of 20.2 per cent. Operating expenses total $299,301,253, a decrease of 19.7 per cent.

In the Eastern district for the eleven months the Class I roads had a net of $424,447,591, which was at the rate of 3.82 per cent, as compared with 5.65 per cent in 1929. Operating revenues in the Eastern district for the eleven months totaled $2,471,872,586, a decrease of 15.8 per cent below the corresponding period the year before, while operating expenses totaled $1,832,009,923, a decrease of 12.4 per cent. For November they had a net of $28,423,178, compared with $41,716,492 in November, 1929.

Class I railroads in the Southern district for the eleven months had a net of $80,100,211, at the rate of 2.64 per cent, compared with $122,201,488, or 4.07 per cent, in 1929. Operating revenues amounted to $594,646,369, a decrease of 16.2 per cent, while operating expenses totaled $466,735,723, a decrease of 12.8 per cent. Class I railroads in the Southern district for November had a net of $6,577,942, compared with $7,853,089 in November, 1929.

Class I railroads in the Western district for the eleven months had a net of $329,962,230, at the rate of 3.21 per cent, compared with $467,248,971, or 4.66 per cent, in 1929. Operating revenues amounted to $1,898,505,281, a decrease of 15.5 per cent, while operating expenses totaled $1,379,429,987, a decrease of 12.2 per cent. For November, the net in the Western district amounted to $27,067,983. The net of the same roads in November, 1929, totaled $37,071,051.

CLASS I RAILROADS—UNITED STATES

	1930	1929
Month of November		
Total operating revenues	$ 398,786,435	$ 499,778,257
Total operating expenses	299,301,253	372,768,304
Taxes	25,900,547	29,918,679
Net railway operating income	62,069,103	86,640,632
Operating ratio—per cent	75.05	74.59
Rate of return on property investment	2.55%	3.64%
Eleven Months Ended November 30		
Total operating revenues	$4,965,024,236	$5,890,912,371
Total operating expenses	3,678,175,633	4,197,174,937
Taxes	334,391,443	378,619,700
Net railway operating income	834,510,032	1,202,707,319
Operating ratio—per cent	74.08	71.25
Rate of return on property investment	3.41%	5.03%

Florida East Coast Proposes Ferry, New Orleans to Havana

The Florida East Coast has petitioned the Interstate Commerce Commission for approval of a plan for the inauguration of a car-ferry service from New Orleans to Havana, by way of Key West, by the Florida East Coast Car Ferry Company, similar to the service which it has for years carried on between Key West and Havana. It asks that it may be permitted to operate the service without filing tariffs with the commission. The ferry company now has three boats having a capacity of 28 freight cars each and proposes to use two of these interchangeably in regular service between New Orleans and Havana while retaining the third for the present operation.

Twelve Roads Agree To Use N. Y. Terminal

Port Authority announces completion of negotiations with interested carriers

According to an announcement made on January 5 by the Port of New York Authority, it has completed negotiations with the 12 railroads serving the New York port district for the operation of the union inland freight terminal which the Port Authority is to build on the block bounded by Eighth and Ninth avenues and West Fifteenth and West Sixteenth streets, New York City. The contract provides that the building shall be completed within 16 months from the date of the agreement, December 31, 1930; that it shall be used by the railroads as their central point in delivery and collection of l. c. l. freight bound to or from New York; that it shall be operated on terms fair to all participating roads by an agency to be organized by the roads themselves and that the Port Authority shall build two additional similar stations in the future, if this first experiment proves successful and if the need for such additional facilities arises.

The official statement of the Port Authority, announcing the signing of the agreement, is as follows:

"This is the final step. It is definitely up to us to proceed with the construction of the terminal. With this in mind, we have executed the contract for the razing of the buildings now on the site chosen for the new terminal.

"The signing of the contract is an outstanding event. It demonstrates what can be done by co-operation. The carriers first agreed among themselves upon the operation and use of the terminal and thereupon approved the contract with the Port Authority. The Port Authority, in its endeavor to modernize and improve the freight handling facilities in the port district, has been fully appreciative of the importance of railroad co-operation.

"This unusual document bears the signatures of the presidents of the following railroads: Baltimore & Ohio; Central of New Jersey; Erie; Delaware, Lackawanna & Western; Lehigh Valley; New York Central; New York, New Haven & Hartford and Pennsylvania. The Pennsylvania's signature also provides for freight on the Long Island; the New York Central's signature for the West Shore and the New York, Ontario & Western; the Central of New Jersey for freight

(Continued on page 171)

Bus Operators Planning New Publicity Campaign

N.A.M.B.O. announces drive to combat current regulation and taxation proposals

Declaring that "all branches of the motor industry are by this time aware of the intention of the railroads of the country through every means at their command to advocate and sponsor legislation, both state and national, for the increase of regulation and taxation of competing forms of transport," the National Association of Motor Bus Operators in a recently-circulated official bulletin announces a campaign to combat current developments in railway publicity policy.

"Intensive preparation has been under way for several weeks," says the statement, "and our members can be assured that when the new year opens we will not only be able to defend ourselves but, if necessary, be in a position to carry the fight to the railroads if they become active before the different state legislatures in their effort to hamper or discourage the operation of motor buses and motor trucks in common carrier service. Studies are now under way, the results of which will conclusively prove the fact that the automotive vehicle is paying its own highway bill . . . . . and also that it is being adequately regulated from every standpoint in every state in the country." The statement also carries the announcement of a general educational and publicity campaign, based on these studies and further holds that "While the rail propaganda has had a wide circulation and much publicity it should not be hard to combat in view of its general non-specific and inconclusive character."

Accompanying the bulletin was a press release from the National Automobile Chamber of Commerce telling of a suit which the Auto Tax Relief Association of Florida was threatening to file against L. R. Powell, president (now receiver) of the Seaboard Air Line and companion suits against that railway and a Florida newspaper, the complaint being alleged misstatements in a speech by Mr. Powell which the newspaper published, dealing with the taxation of commercial motor vehicles.

Advisory Board Summaries

Shippers of the country, through estimates submitted to the Shippers' Regional Advisory Boards, anticipate that carload shipments of the 29 principal commodities in the first quarter of 1931 will be approximately 6,568,456 cars, a reduction of 380,607 cars or 5.5 per cent below the corresponding period in 1930. Loading in the first quarter of 1930 was about 6 per cent less than that in 1929.

Except for the Pacific Coast board, which covers California, Arizona, Nevada and part of New Mexico, all of the 13 shippers' boards anticipate a reduction in transportation requirements for the first quarter of the year 1931. The estimates of the board as to freight loadings by cars for the 29 principal commodities are as follows:

Board	Actual 1930	Estimated 1931	Percent
Atlantic States	755,558	747,198	1.1 Decrease
Central Western	295,005	284,020	3.7 Decrease
Pacific Coast	263,089	273,043	3.8 Increase
Pacific Northwest	221,865	194,201	12.5 Decrease
Great Lakes	388,646	361,657	6.9 Decrease
Ohio Valley	813,091	710,235	12.6 Decrease
Mid-West	1,165,355	1,092,794	6.2 Decrease
Northwest	240,039	231,069	3.7 Decrease
Trans-Mo-Kansas	386,230	370,362	4.1 Decrease
Southeast	820,267	791,258	3.5 Decrease
Southwest	496,009	458,018	7.7 Decrease
New England	169,768	156,930	7.6 Decrease
Allegheny	934,141	897,671	3.9 Decrease
Total	6,949,063	6,568,456	5.5 Decrease

It is estimated that of the 29 commodities increases in transportation requirements will develop for five, as follows: Grain; citrus fruits; other fresh fruits; vegetables, except potatoes, and canned goods.

Electric Operation Extended on Lackawanna

The fourth of the fifth sections of the Northern New Jersey suburban lines of the Delaware, Lackawanna & Western which are being electrified was placed in operation on January 6, when electric train service was inaugurated on the 22-mile line from Summit, N. J., through Bernardsville to Gladstone. The first electric train to be operated over this route was chartered by a committee representing citizens of the 12 towns on the line.

The Lackawanna is now electrified from Hoboken, N. J., to Montclair, from Hoboken to South Orange, and from the latter point to Morristown. The final stretch, from Morristown to Dover, is expected to be completed during the current month.

A.R.E.A. Shortens Convention

The board of directors of the American Railway Engineering Association at a meeting held in Chicago on January 6, voted to hold its annual convention on the dates originally selected, but to reduce it from a three-day to a two-day meeting. The convention will, therefore, be held at the Palmer House, Chicago, on March 10 and 11. The president's dinner on the evening preceding the opening of the convention will be omitted as will the banquet normally held on the evening of the second day. Three sessions will be held on the first day, at 9:30, 2:30 and 7:30. On the second day the meeting will be called to order at 9 a.m. and will adjourn late that evening. There will be no curtailment in the number of committee reports presented or in the manner of their presentation as it is desired that they be discussed from the convention floor in the usual thorough manner.

The National Railway Appliances Association will present its exhibit at the Coliseum, Chicago, in the same manner as heretofore on March 9-12 inclusive. All available floor space has already been contracted and paid for, assuring an exhibit of the same size as heretofore.

Railways Hampered In Present Competition

Porter stresses need for measures to place all carriers on equitable basis

The need for measures to enable the railroads to compete more fairly with other forms of transportation is emphasized in an article signed by Claude R. Porter, Interstate Commerce Commissioner, on "Our Railroads in the Next Ten Years," published in the current number of Nation's Business. "If the railroads," he says, "are to be saved as efficient transportation agencies it will take the best thought of those in charge, together with the members of the state and national regulatory bodies and the leaders of industry and commerce."

Commissioner Porter points out that the railroads are now facing four new and dangerous rivals,—aviation, motor bus and truck, rejuvenated waterways and the pipe line. The average business man, he says, is not daunted by new competition, but he has a right to demand that the rules of the game be the same for everybody. With the exception of pipe lines, these new rivals of the railroads are receiving government aid. In the opinion of Commissioner Porter, the pipe line is perhaps as dangerous as any one of the three competitors because it depends on unaided efficiency to get business. Whatever hurts the railroads, says the commissioner, hurts every one of us. The investors of this country have absorbed more than 14 billion dollars in railroad bonds and almost 10 billion dollars in railroad stock. One insurance company alone has more than half a billion dollars' worth of railroad securities. One dividend-paying railroad has more than 212,000 stockholders. The least imaginative can discover for himself a score of hurts which the crippling of the great rail transportation systems would inflict upon us.

"Here is one illustration. Economies forced on the roads in the 1920-28 period saved to them $1,000,400,000. Their operating expenses were reduced by that almost incredible total. I say these economies were forced on the roads because in that period freight and passenger rates were fixed by agencies exterior to the roads. In that regulated period, then, the roads returned to the public 900 million dollars in reduced fares. In that same period, too, the roads paid 117 million dollars more in taxes. They had to economize. But this extraordinary efficiency cast a black shadow. In 1928 there were 377,000 fewer men on the pay rolls than in 1920. This army was not added to the legion of the unemployed by the desire of the railroad administrators. No business men ever willingly reduced his pay roll. Let us examine the reasons.

"Through the ten year period ending with 1930, the freight business of the railroads has remained stationary. In the same period the roads lost almost one-third of their passenger revenues.

They received $428,885,689 less in 1929 for hauling 383,480,413 fewer persons than in 1920.

"The Interstate Commerce Commission decreed that 5¾ per cent is a fair return on the value of the roads. Due to this diminution in business the eight months of 1930 ending with September 1 show an earning by the Class I roads at the annual rate of only 3.94 per cent. The smaller roads are by no means so fortunate. Yet seven of the ten years beginning with 1920 were highly prosperous. In that decade 50,000 miles of weak and short lines were saved to the railroad transportation system by unification with stronger lines. Yet 1,000 miles a year are being abandoned."

Commissioner Porter points out that it is doubtful if the railroads can again put into operation such economies as showed such remarkable results during the 1920-1930 period. "Occasionally an unusual condition may be met by an exceptional man, but it may be assumed that the roads have already cut their costs to the bone. Frugality alone will not save them. Some other means must be devised. What means? The consolidations which have been proposed and have been under examination for some years? A form of super-control? A further abandonment of minor and branch roads and a concentration on main lines and long hauls? A transport company owning and operating air, motor and rail lines? Government ownership and operation? I am not proposing a remedy but merely trying to make a diagnosis."

Successor to Mr. Doak

J. A. Farquharson, assistant president of the Brotherhood of Railroad Trainmen, has been appointed national legislative representative of that organization at Washington, to succeed William N. Doak, who was recently appointed Secretary of Labor.

New C. P. R. Branch in Service

The Canadian Pacific placed its 35-mile branch between Procter, B. C. and Kootenay Landing, in service on January 1, thereby making possible a direct all-rail route between Vancouver and Medicine Hat. Two through trains are being operated daily.

New Car Service Rules Postponed

The Interstate Commerce Commission has further postponed the effective date of its order requiring modification of the rules for car-hire settlement from December 31 to January 30, pending proceedings in the federal district court.

Chesapeake Ferry Order Protested

The Claiborne-Annapolis Ferry Company has filed suit in the supreme court of the District of Columbia for an injunction to prevent the Chesapeake Beach Railway from establishing a ferry service across Chesapeake Bay under a certificate issued by the Interstate Commerce Commission, asserting that the commission had no jurisdiction to authorize a ferry service and that the evidence had brought out that there was no need for a new service competitive with that of the plaintiff company.

Low Fares Result Favorably

The Atchison, Topeka & Sante Fe reports that the reduced day coach fares between Chicago and the Pacific coast which were in effect during November resulted in a substantial increase in day coach business compared with the same month in 1929.

Kentucky Freight-Rate Hearings

The Kentucky Railroad Commission has set March 16 as the date on which it will start hearings at different points in its investigation of intrastate freight rates. The commission, acting under an act passed by the 1930 legislature, recently cited all railroads to show cause why this investigation should not be made. Demurrers have been overruled.

Wage Statistics for October

Class I railways reported to the Interstate Commerce Commission a total of 1,454,963 employes as of the middle of the month of October, a decrease of 294,896, or 16.85 per cent, as compared with the corresponding month of 1929. The total compensation for the month was $213,874,715, a decrease of 18.88 per cent.

Further Two-Cents-a-Mile Proposal

The Missouri Pacific has applied to the Railroad Commission of Texas for permission to charge 2-cents a mile passenger fare in rail motor coaches between Austin, Tex., and San Antonio, 82 miles. The company plans to run these coaches every two hours between 7 a.m. and 7:50 p.m.; running time 2½ hr., slightly less than the present train schedule.

Railroad Police Elect Officers

The Chicago Railway Special Agents' and Police Association at a meeting in Chicago, on December 30, elected the following officers: President Lawrence Benson, general superintendent of police of the Chicago, Milwaukee, St. Paul & Pacific; vice-president Walter Redman, general superintendent of police of the Erie, and secretary and treasurer Joseph Prendergast, chief of police of the Chicago Union Station.

Pennsylvania Opens New Piers

The completion and official opening of the Pennsylvania's new Jersey City (N. J.) rail-water terminal, adjacent to Exchange Place station, was celebrated with a luncheon and inspection of the new facilities on January 6. The entire project, which has been carried out at an expenditure of several million dollars by the Pennsylvania Railroad and the Pennsylvania Dock & Warehouse Company, includes two new warehouses, one eight-story cold storage warehouse, and two double-deck piers, both equipped with complete facilities for movement of passengers or freight between the railroad and ocean steamers.

Signal Section Meeting

The Committee of Direction of the Signal Section, American Railway Association, at a meeting held in Chicago on January 7, decided that the annual meeting of the Signal Section, heretofore held in Chicago in March, will be held in New York City May 12 and 13. This action was taken in accordance with the policy adopted at the stated meeting last September, of holding only one meeting annually.

Oregon-Washington Construction Order Postponed

The Interstate Commerce Commission has further postponed to April 1, 1931, the effective date of its order directing the Oregon-Washington Railroad & Navigation Company to construct an extension across the state of Oregon. The date for the beginning of construction work under the order was postponed at the request of the district court in which is pending a petition by the railroad contesting the commission's order.

Low Fares Modified

The St. Louis-San Francisco, the Missouri Pacific and the Illinois Central, which several months ago established a $5 round trip passenger fare between St. Louis, Mo., and Memphis, Tenn., to compete with a low motor coach rate, replaced the low fare on December 23 with a rate of $7.50 following the raising of round-trip fares from $6 to $10.80 by three motor coach lines. The $7.50 rate is good only in coaches, whereas the $5 rate was good also in parlor and sleeping cars.

I. C. C. Intrastate Rate Order Held Invalid

The Supreme Court of the United States on January 5 held invalid an order of the Interstate Commerce Commission directing the maintenance of rates for the intrastate shipments of logs in Florida on the same basis as rates from points in Florida to destinations in Georgia. It is held that the commission had acted without sufficient evidence to show that the state rates resulted in unjust discrimination against interstate commerce.

Employees Laid Off Sue Railroad

Twelve Louisville & Nashville switchmen who have been laid off, have entered suit for damages in court at Louisville, Ky., against 70 switchmen, now at work, and against the railroad company, alleging losses of $1000 each because the 70 switchmen, who are named as defendants were favored by the railroad company when plaintiffs were laid off last July. Plaintiffs aver that they are of a higher rank than the men who con-

tinued to work. The suit is based on a contract between the railroad and its employees which was made in 1924, and re-enacted in 1927; and it is alleged that a "supposed contract" made in September, 1925, which was the basis of the action of the company now complained of, was made by E. E. Oster, general chairman, with Smith, Turner and Groshche, assistants to the general manager, without due authority.

Fire at Pennsylvania Freight Terminal

One of the freight terminals of the Pennsylvania at Greenville (Jersey City), N. J., was badly damaged by fire on the night of January 1, temporarily suspending traffic. Five float bridges were put out of service and the total estimated damage, including freight cars loaded and empty, was over $200,000.

There was no great delay to freight movement, some cars being moved to this terminal by way of Harsimus Cove on floats and some over the tracks of the Lehigh Valley.

The C. N. R. in November

Gross revenues of the Canadian National Railway during the month of November totalled $17,169,986; operating expenses were $15,095,570, and net revenue was $2,074,415. In November a year ago, gross revenues amounted to $20,863,259; operating expenses were $17,758,582 and net revenue was $3,104,676. While gross revenues were decreased by $3,693,273, operating expenses were reduced by $2,663,011.

The aggregate net revenue to the end of November last year was $25,693,365, gross revenues reaching the total of $206,444,104 and operating expenses $180,750,738.

Appropriation Proposed for Rivers and Harbors

An appropriation of $60,000,000 for maintenance and improvement of river and harbor works in the fiscal year ending June 30, 1932, was recommended by the House appropriations committee in its report on the War Department appropriation bill. This is an increase of $5,000,000 over the amount provided for the present year and is in addition to $22,500,000 recently provided for in an emergency bill. In testimony before a sub-committee, Major General Lytle Brown, chief of engineers, estimated the cost of completing all river and harbor projects now authorized by Congress at $277,000,000, after allowing for the abandonment of certain projects recommended, but that in addition there will be required approximately $200,000,000 to complete certain approved projects, such as those on the Tennessee, the upper Mississippi and the Missouri, for which partial authorizations only have been granted.

Members of the Minnesota delegation in Congress appeared before the committee to urge an increase in the appropriation from $60,000,000 to $75,000,000 for the purpose of expediting the work on the upper Mississippi, but General Brown had told the committee that the plans had not yet been sufficiently developed to make it possible to spend that additional money economically in the coming year.

Farm Board Asked to Serve as Rate Expert for Farmers

Representative Jones, of Texas, has announced his intention of introducing in Congress a joint resolution directing the Federal Farm Board to establish a rate adjustment division for the purpose of filing applications with the Interstate Commerce Commission "to correct the freight rate discriminations against the shipment of farm products." He says the railroads and industry have their highly paid trained experts to handle their cases before the commission but that when he visited the farm board to file an application for reduced rates on export wheat and cotton he had been told that the commission handled such matters, and when he took the matter up with the commission he was told that no one authorized to speak for the farm group had applied for such reductions.

Fourth Section Relief Allowed to Southern Ports

By a six to five decision made public on January 6 the Interstate Commerce Commission authorized the railroads serving south Atlantic and Gulf ports and their connecting lines to establish or continue export and import freight rates except on grain, between points in Central and Western Trunk Line territories and those ports, which will be lower than the rates contemporaneously applicable from intermediate points.

"Generally speaking," the majority report said, "the purpose of the relief prayed is to enable the applicants to compete with carriers serving the north Atlantic ports. It is alleged that the rates at intermediate points not affected by competition are on a reasonable basis and that to reduce them would result in useless loss of revenue."

Commissioners McManamy and Eastman wrote dissenting opinions strongly opposing the action of the majority, and Commissioners Farrell, Lee and Tate also dissented.

Express Employee's Wages Settled

The report of a Board of Arbitration, of which Charles W. Flint was chairman, which was made public on January 6, settles a grievance of employees of the Railway Express Agency. The Board is said to have granted nearly or quite all of the demands of the employees. The arbitrators were appointed following an appeal to the Federal Board of Arbitration in July last.

The report holds that messengers employed in train service where there is no regular assignment, shall be paid 65½ cents an hour; helpers, etc., 55½ cents. Four hours' pay shall be paid for four hours or less of work, and eight hours' pay for men working eight hours or less, and more than four hours. Men on short runs are to receive overtime for all over 240 hours a month. Eight hours work a day is to mean eight hours within a period of 12 hours. The report sets forth the manner of providing a maximum number of hours for regular employees and stipulates that after all possible adjustments have been made for full-time employees, an extra list shall be created. The number of persons on the extra list at each point is left to be fixed by mutual agreement.

A.R.E.A. Nominates Officers

The Nominating Committee of the American Railway Engineering Association has nominated the following candidates for office during the year beginning next March: President, L. W. Baldwin, president, M. P.; second vice-president, W. P. Wiltsee, chief engineer, N. & W.; secretary, E. H. Fritch; treasurer, A. F. Blaess, chief engineer, I. C. In addition, J. V. Neubert, chief engineer maintenance of way, N. Y. C., is automatically elevated from second vice-president to first vice-president.

Directors (three to be elected) W. C. Barrett, trainmaster, L. V.; E. A. Hadley, chief engineer, M. P.; T. T. Irving, chief engineer (Central region) C. N. R.; J. C. Irwin, valuation engineer, B. & A.; F. R. Layng, assistant chief engineer, B. & L. E.; S. S. Roberts, assistant director, Bureau of Finance, Interstate Commerce Commission; C. H. Stein, assistant to president, C. R. R. of N. J.; Hermann von Schrenk, consulting timber engineer; A. R. Wilson, engineer bridges and buildings, Penna.

Members of Nominating Committee (five to be elected): Wm. G. Atwood, consulting engineer; C. W. Baldridge, assistant engineer, A. T. & S. F.; G. F. Hand, general assistant engineer, N. Y., N. H. & H.; E. M. Hastings, chief engineer, R. F. & P.; A. N. Reece, chief engineer, K. C. S.; R. T. Scholes, assistant to chief engineer, C. B. & Q.; W. D. Simpson, assistant engineer maintenance of way, S. A. L.; C. H. Tillett, signal engineer, C. N. R.; S. T. Wagner, consulting engineer, Reading; C. C. Williams, dean, College of Engineering, University of Iowa.

Railway Club Meetings

The Railway Club of Greenville (Pa.) will hold its next meeting on Tuesday evening, January 20 at Zion's Reformed Church, Greenville. F. A. Conner will present a paper on navigation on the Chenango River.

At a joint meeting of the New York Railroad Club and the Metropolitan Section of the American Society of Mechanical Engineers, which will be held on Friday evening, January 16, a paper entitled "Air Conditioning of Railway Passenger Cars" will be presented by R. W. Waterfill of the Carrier Engineering Company. The paper will be illustrated with lantern slides. The meeting will be held in the auditorium of the Engineering Societies building, 29 West Thirty-Ninth street, New York, at 8 p.m.

(Continued on page 170)

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1930

Name of road		Av. mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Akron, Canton & Youngstown	Nov.	171	$164,248	$105	$171,468	$30,104	$19,837	$13,202	$55,252	$16,726	$134,709	78.6	$36,759	$59,436	$38,961	$18,180
	11 mos.	171	2,476,973	1,218	2,574,256	411,089	248,458	154,775	724,153	191,290	1,718,844	66.8	855,412	785,599	537,387	987,029
Atchison, Topeka & Santa Fe	Nov.	9,628	12,002,460	1,810,796	15,049,003	1,719,225	2,781,779	476,482	4,171,118	436,545	9,537,035	63.4	5,511,968	4,077,138	4,211,738	6,061,867
	11 mos.	9,629	130,323,127	26,440,213	172,090,726	25,956,353	34,337,985	4,616,853	50,760,950	4,926,642	120,285,674	69.9	51,805,052	36,451,935	36,161,165	56,626,470
Gulf, Colorado & Santa Fe	Nov.	1,976	1,677,296	109,874	1,898,082	232,230	329,938	60,278	574,745	67,830	1,252,408	66.0	645,674	527,453	448,983	1,105,979
	11 mos.	1,957	20,818,390	1,507,757	23,689,141	4,138,756	4,677,354	632,450	7,203,537	817,491	17,330,176	73.2	6,358,965	5,258,607	3,840,803	5,398,617
Panhandle & Santa Fe	Nov.	1,717	1,102,197	79,745	1,251,037	136,333	236,003	22,580	373,796	37,391	799,745	63.9	451,292	397,752	301,616	574,811
	11 mos.	1,606	12,807,467	930,352	14,606,028	3,025,159	2,914,819	222,378	4,133,294	429,707	10,612,842	72.7	3,993,186	3,519,401	2,251,598	4,287,420
Atlanta & West Point	Nov.	93	111,900	32,943	171,110	32,424	33,503	11,208	73,171	12,674	167,330	97.8	3,780	—9,281	—23,215	22,398
	11 mos.	93	1,454,560	423,745	2,172,672	301,209	399,875	130,942	872,491	134,712	1,889,835	87.0	282,837	142,725	14,128	202,637
Western of Alabama	Nov.	133	126,008	37,842	184,678	20,382	43,033	11,315	68,256	12,096	158,605	85.8	26,073	10,112	13,944	35,301
	11 mos.	133	1,636,048	454,815	2,325,880	292,242	481,475	134,249	827,824	140,680	1,917,284	82.4	408,596	249,175	296,379	390,982
Atlanta, Birmingham & Coast	Nov.	639	251,069	13,678	300,373	74,674	78,328	26,408	133,186	19,190	342,141	113.9	—41,768	—61,920	—80,648	—55,780
	11 mos.	639	3,189,645	189,011	3,793,761	899,034	841,440	309,044	1,605,616	219,438	3,992,973	105.2	—199,212	—370,213	—563,533	—199,379
Atantic Coast Line	Nov.	5,159	4,000,349	518,988	4,993,522	727,955	991,659	165,124	1,812,236	174,279	3,896,292	78.0	1,097,230	646,912	623,622	503,019
	11 mos.	5,156	42,377,599	9,801,877	57,617,485	9,065,318	11,451,297	1,844,343	20,732,530	1,928,219	45,592,227	79.1	12,025,258	6,927,812	6,554,777	11,917,509
Charleston & Western Carolina	Nov.	342	180,019	5,488	193,876	25,780	29,590	7,272	84,646	7,365	154,653	79.8	39,223	24,218	18,320	49,769
	11 mos.	342	2,416,527	82,401	2,593,036	532,909	409,791	80,071	974,375	81,495	2,078,650	80.2	514,386	311,143	278,510	428,277
Baltimore & Ohio	Nov.	5,658	12,482,768	1,246,019	14,800,122	1,500,825	2,888,171	508,816	5,694,958	645,966	11,397,447	77.0	3,402,675	2,643,088	2,379,285	3,227,244
	11 mos.	5,658	162,505,896	17,139,905	192,861,617	21,337,151	39,085,549	5,795,904	67,338,252	7,489,304	142,977,376	74.1	49,884,241	39,988,496	37,180,824	46,742,207
Baltimore & Ohio Chic. Term	Nov.	85	.....	.....	290,721	32,972	35,532	2,240	152,717	17,165	246,636	84.8	44,085	—3,910	104,510	89,963
	11 mos.	85	.....	.....	3,584,677	529,692	430,249	26,216	1,792,544	201,904	3,040,537	84.8	544,140	—49,752	1,167,684	1,316,924
Staten Island Rapid Transit	Nov.	23	59,685	110,524	178,652	11,577	14,688	2,121	97,573	17,149	143,108	80.1	35,544	16,685	10,788	54,954
	11 mos.	23	739,497	1,420,747	2,270,485	189,737	174,539	23,906	1,108,869	187,936	1,684,987	74.2	585,498	392,078	292,135	383,289
Bangor & Aroostook	Nov.	619	533,559	25,771	587,987	106,789	137,299	4,911	160,079	27,885	439,010	74.7	148,977	100,396	101,766	186,666
	11 mos.	619	6,845,030	502,373	7,683,837	1,307,665	1,324,959	61,897	1,829,378	294,180	4,847,427	63.1	2,836,410	2,187,723	2,201,231	2,159,000
Belt Ry. Co. of Chicago	Nov.	57	.....	.....	490,428	25,726	64,670	3,572	233,233	9,986	337,187	68.8	153,241	98,513	147,942	142,747
	11 mos.	57	.....	.....	6,348,372	557,992	677,379	44,510	2,994,620	129,650	4,404,151	69.4	1,944,221	1,349,761	1,664,504	1,651,086
Bessemer & Lake Erie	Nov.	227	852,462	3,067	869,447	55,740	313,729	13,714	245,886	35,060	665,587	76.5	203,860	258,962	266,490	443,380
	11 mos.	227	14,040,455	52,183	14,277,768	1,183,423	3,639,674	166,595	3,136,224	397,529	8,551,634	59.9	5,726,134	4,965,270	4,948,726	7,342,153
Bingham & Garfield	Nov.	33	25,307	.....	25,961	6,243	6,783	1,378	8,138	6,651	29,297	112.9	—3,336	—11,840	5,363	20,706
	11 mos.	33	330,611	88	340,320	73,090	76,753	17,008	90,435	54,569	313,044	92.0	27,276	—38,689	142,323	229,917
Boston & Maine	Nov.	2,090	3,531,722	962,927	5,240,386	769,553	765,643	84,231	2,012,502	209,048	3,860,430	73.7	1,379,956	1,085,616	863,485	720,551
	11 mos.	2,090	41,973,691	13,156,936	63,907,060	10,756,096	9,476,620	995,394	23,100,049	2,407,951	47,004,526	73.6	16,902,534	13,646,075	11,257,351	12,032,728
Brooklyn Eastern Dist. Term	Nov.	11	100,455	.....	102,213	8,993	12,796	34	36,329	5,640	63,792	62.4	38,421	31,149	31,149	30,604
	11 mos.	11	1,201,416	.....	1,223,467	109,786	156,424	4,377	401,189	61,869	733,645	60.0	489,822	414,280	414,280	427,031
Buffalo & Susquehanna	Nov.	253	129,285	391	145,525	17,349	37,432	2,028	43,670	7,664	108,143	74.3	37,382	35,303	45,733	19,392
	11 mos.	253	1,520,061	7,036	1,669,151	296,882	471,720	22,594	488,312	89,775	1,369,283	82.0	299,868	288,899	515,321	300,146
Buffalo, Rochester & Pittsburgh	Nov.	601	1,103,133	44,620	1,193,876	137,521	303,840	35,980	483,950	40,991	996,357	83.5	197,519	182,514	188,021	208,254
	11 mos.	601	13,130,139	597,083	14,231,388	1,845,320	3,727,298	406,395	5,494,798	480,491	11,964,056	84.1	2,267,332	1,901,425	2,030,175	2,721,337
Burlington-Rock Island	Nov.	367	207,469	3,046	217,622	32,859	18,534	6,555	60,729	39,111	157,773	72.5	59,849	52,039	15,658	—7,868
	11 mos.	367	1,822,903	49,074	2,016,922	1,096,059	312,693	73,130	806,970	167,363	2,341,372	116.1	—324,450	—412,137	—745,107	—85,352
Canadian Pac. Lines in Maine	Nov.	233	140,415	20,374	173,056	51,948	42,198	7,614	80,426	4,014	186,200	107.6	—13,144	—17,144	—34,876	—60,928
	11 mos.	233	1,785,397	316,989	2,260,323	544,789	547,841	85,507	994,849	46,811	2,219,797	98.2	40,526	—98,474	—303,529	—284,040
Canadian Pacific Lines in Vermont	Nov.	85	91,942	17,284	128,217	23,516	24,507	1,963	79,774	2,545	132,305	103.2	—4,088	—8,208	—38,584	—37,332
	11 mos.	85	1,084,037	338,160	1,679,604	270,456	347,482	22,414	955,413	28,070	1,623,748	96.7	55,856	11,436	—326,894	—241,896
Central of Georgia	Nov.	1,944	1,168,778	162,383	1,476,885	120,010	192,663	66,536	647,633	79,226	1,111,829	75.3	365,056	282,521	273,507	337,445
	11 mos.	1,944	15,174,848	2,537,052	19,617,971	2,068,144	3,251,795	754,948	7,850,991	902,278	14,942,958	76.2	4,675,013	3,377,162	3,431,026	4,134,550
Central New Jersey	Nov.	692	2,905,629	554,070	3,804,188	371,292	806,611	52,750	1,500,032	106,181	2,860,493	75.2	943,695	546,250	433,852	726,508
	11 mos.	692	37,205,321	7,829,692	48,135,538	4,677,886	10,056,458	658,160	18,316,509	1,409,155	35,403,681	73.5	12,731,857	8,137,716	6,844,835	8,629,540
Central Vermont	Nov.	462	485,069	47,748	588,489	67,198	111,514	17,584	263,049	23,856	485,467	82.5	103,022	86,295	95,151	113,029
	11 mos.	465	5,451,652	910,828	7,058,388	1,223,876	1,150,795	201,629	2,964,980	275,765	5,838,906	82.7	1,219,482	1,041,953	1,217,842	1,734,032
Chesapeake & Ohio	Nov.	3,116	10,218,803	349,997	11,041,912	1,415,333	1,940,115	159,603	2,891,031	348,269	6,775,458	61.4	4,266,454	3,339,110	3,286,226	3,722,897
	11 mos.	3,113	11,659,961	5,103,455	127,178,453	17,403,489	24,888,980	1,841,369	32,257,200	3,902,617	80,540,427	63.3	46,638,026	37,246,021	37,757,339	40,577,529
Chicago & Alton	Nov.	1,028	1,253,555	323,998	1,766,499	181,658	508,662	73,676	780,442	58,566	1,605,981	90.9	160,518	33,375	—168,855	87,008
	11 mos.	1,028	16,266,342	4,043,769	22,634,823	3,245,832	5,205,523	851,096	8,754,252	709,426	18,898,280	83.5	3,736,543	2,458,070	353,162	3,115,433
Chicago & Eastern Illinois	Nov.	946	1,140,789	164,271	1,434,796	126,353	369,915	77,911	633,695	62,665	1,280,383	89.2	154,413	—879	—150,379	54,903
	11 mos.	946	14,368,558	2,415,592	18,413,701	2,152,970	4,234,178	887,761	7,662,043	768,062	15,819,580	85.9	2,594,121	1,069,112	—690,528	2,112,693

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income. 1929.
Chicago & Illinois Midland	Nov.	131	$285,501	$3,366	$297,157	$24,197	$47,746	$19,134	$79,733	$26,246	$196,613	66.2	$100,544	$92,209	$79,356	$73,833
	11 mos.	131	2,709,984	48,881	2,869,364	319,829	570,364	233,718	809,830	269,509	2,200,200	76.7	669,164	577,228	508,170	493,024
Chicago & North Western	Nov.	8,459	6,596,846	1,188,637	8,827,559	1,641,083	1,452,828	196,572	3,798,734	382,809	7,527,819	85.3	1,299,740	689,141	303,077	933,428
	11 mos.	8,459	89,959,849	17,885,288	121,303,602	17,938,921	22,855,163	2,406,032	46,145,035	4,238,431	93,974,659	77.5	27,328,943	19,119,183	16,297,328	26,153,816
Chicago, Burlington & Quincy	Nov.	9,324	8,534,593	1,003,428	10,613,787	1,262,863	2,054,333	231,775	3,734,514	351,077	7,725,913	72.8	2,887,874	2,043,150	1,662,960	1,811,081
	11 mos.	9,333	102,632,129	14,240,844	130,499,622	19,095,731	19,921,573	3,199,099	43,131,877	4,065,144	90,539,129	69.4	39,960,493	29,429,856	26,496,543	32,821,927
Chicago Great Western	Nov.	1,495	1,537,935	127,486	1,792,422	289,500	175,621	75,975	701,748	51,420	1,298,263	72.4	494,159	389,327	145,337	243,729
	11 mos.	1,495	17,719,919	1,832,791	21,145,116	3,163,963	2,624,364	918,720	8,147,353	591,533	15,480,761	73.2	5,664,355	4,663,872	2,578,973	2,580,478
Chicago, Indianapolis & Louisville	Nov.	644	813,537	111,511	1,034,521	117,154	230,732	35,183	425,494	33,310	845,271	81.7	189,250	116,112	1,083	79,431
	11 mos.	646	10,951,997	1,390,064	13,677,562	1,590,923	2,848,663	424,715	5,070,488	389,498	10,426,679	76.2	3,250,883	2,388,289	1,004,793	2,366,308
Chicago, Mil., St. Paul & Pacific	Nov.	11,328	8,449,735	828,279	10,345,079	1,334,584	2,187,863	301,707	4,116,095	331,779	8,309,702	80.3	2,035,377	1,232,037	780,269	1,713,230
	11 mos.	11,312	107,862,059	11,680,439	132,642,124	21,205,760	26,002,622	3,527,412	49,071,079	4,006,908	104,246,291	78.6	28,395,833	19,505,593	15,121,073	24,817,707
Chicago River & Indiana	Nov.	20	.....	.....	468,323	53,000	40,000	1,642	162,070	18,804	275,516	58.8	192,807	182,307	242,166	305,540
	11 mos.	20	.....	.....	5,678,114	543,000	488,600	16,704	1,984,077	203,870	3,236,251	57.0	2,441,863	2,136,180	2,896,980	3,394,281
Chicago, Rock Island & Pacific	Nov.	7,592	6,453,539	990,398	8,253,031	900,515	1,480,780	250,108	3,295,410	351,302	6,288,105	76.2	1,964,926	1,460,695	1,089,777	1,145,979
	11 mos.	7,592	84,620,225	13,486,075	108,280,859	13,631,240	19,077,129	2,759,652	39,956,739	3,776,965	80,022,239	73.9	28,258,620	21,864,621	17,107,735	19,970,247
Chicago, Rock Island & Gulf	Nov.	625	447,622	51,894	540,195	30,540	39,846	19,443	172,574	22,116	284,009	52.6	256,186	206,043	180,121	253,050
	11 mos.	587	5,118,671	615,852	6,216,491	827,733	556,805	231,326	2,111,236	236,671	3,977,604	64.0	2,238,887	1,952,930	1,546,166	2,579,534
Chic., St. Paul, Minn. & Omaha	Nov.	1,736	1,374,492	194,737	1,710,975	285,000	358,636	39,728	802,015	82,102	1,577,069	92.2	133,906	35,111	—47,572	158,658
	11 mos.	1,741	17,967,770	2,979,654	22,781,092	3,441,357	4,324,702	449,519	9,530,570	939,691	18,789,504	82.5	3,991,588	2,802,882	1,914,633	3,245,854
Clinchfield R. R.	Nov.	309	450,898	7,025	467,600	46,337	118,471	19,282	108,332	16,681	308,979	66.1	158,621	73,590	164,370	224,125
	11 mos.	309	5,319,523	100,599	5,533,204	620,311	1,382,089	231,111	1,231,773	197,223	3,661,255	66.2	1,871,949	1,111,703	1,774,670	2,504,232
Colorado & Southern	Nov.	1,037	805,394	57,284	935,388	107,413	154,732	14,766	286,297	39,360	604,157	64.6	331,231	261,247	243,065	363,877
	11 mos.	1,038	7,827,135	766,669	9,448,390	1,419,208	1,812,020	174,984	3,319,874	458,686	7,217,894	76.4	2,230,496	1,459,738	1,207,523	1,540,414
Ft. Worth & Denver City	Nov.	696	586,960	80,323	716,496	76,050	107,192	19,010	230,945	38,571	477,086	66.6	239,410	203,551	192,216	361,944
	11 mos.	696	6,946,441	1,187,809	8,791,609	1,192,856	1,523,977	231,465	2,782,291	429,559	6,185,042	70.4	2,606,567	2,120,184	1,993,584	3,233,485
Wichita Valley	Nov.	270	87,288	2,153	92,431	13,123	4,022	116	29,112	1,862	48,235	52.2	44,196	34,939	18,224	48,731
	11 mos.	271	721,786	29,718	801,340	261,057	57,568	500	319,930	19,452	658,948	82.2	142,392	61,619	—140,274	268,064
Columbus & Greenville	Nov.	167	114,284	9,040	131,921	29,770	17 787	4,352	46,637	12,189	110,735	83.9	21,186	14,783	13,123	48,249
	11 mos.	167	1,254,979	133,933	1,477,078	375,648	218,701	46,753	530,544	131,503	1,299,663	88.0	177,415	131,496	105,337	233,172
Conemaugh & Black Lick	Nov.	20	50,495	.....	85,270	12,593	15,859	517	48,548	3,583	81,140	95.2	4,130	6,130	9,027	16,845
	11 mos.	20	754,392	.....	1,342,022	142,020	223,484	8,664	756,946	39,990	1,171,101	87.3	170,921	162,921	191,603	382,063
Delaware & Hudson	Nov.	881	2,638,808	151,564	2,949,770	548,329	671,191	59,129	1,077,726	158,449	2,522,609	85.5	427,161	303,953	343,236	587,359
	11 mos.	881	30,221,861	2,556,664	35,042,686	5,130,679	8,107,764	643,152	12,370,911	1,735,951	28,073,030	80.1	6,969,656	5,615,231	5,749,651	7,525,226
Delaware, Lackawanna & Western	Nov.	998	3,878,306	725,120	5,294,796	538,397	958,619	126,574	2,252,984	170,105	4,083,089	77.1	1,211,707	721,687	749,317	1,301,583
	11 mos.	998	46,754,575	9,319,305	64,103,635	6,323,117	11,788,312	1,578,842	26,222,263	1,947,469	48,319,082	75.4	15,784,553	10,199,248	10,377,067	15,891,817
Denver & Rio Grande Western	Nov.	2,524	2,221,506	129,271	2,523,904	266,740	430,640	60,503	842,840	87,761	1,706,097	67.6	817,807	617,696	562,918	723,598
	11 mos.	2,551	22,999,082	2,443,801	27,466,237	3,664,076	5,110,842	665,019	8,448,113	999,152	19,127,854	69.6	8,338,383	6,364,753	6,417,276	7,938,020
Denver & Salt Lake	Nov.	232	298,911	9,685	322,766	26,120	41,525	1,979	45,028	11,330	125,982	39.0	196,784	179,784	184,225	230,839
	11 mos.	232	2,585,109	138,324	2,920,117	596,874	595,008	24,913	470,232	159,439	1,831,815	62.7	1,088,302	913,200	991,939	1,444,528
Detroit & Mackinac	Nov.	242	58,854	3,563	71,785	23,488	12,104	1,492	29,076	2,567	70,076	97.6	1,709	—6,870	—7,940	—8,199
	11 mos.	250	841,490	78,336	1,020,841	291,268	181,221	22,718	379,735	63,945	901,589	88.3	119,252	36,141	31,551	272,970
Detroit & Toledo Shore Line	Nov.	50	269,336	.....	274,353	43,550	24,583	7,455	74,243	9,770	159,469	58.1	114,886	97,130	39,572	—15,631
	11 mos.	50	3,368,634	.....	3,421,948	439,753	334,502	83,063	884,396	121,719	1,861,764	55.3	1,560,184	1,308,453	632,498	710,078
Detroit Terminal	Nov.	19	.....	.....	79,153	7,581	10,934	.....	46,734	4,223	69,472	87.8	9,681	—4,191	—3,647	—7,013
	11 mos.	19	.....	.....	1,281,358	184,172	129,885	84	661,494	48,226	1,023,861	79.9	257,497	91,001	100,634	591,603
Detroit, Toledo & Ironton	Nov.	509	503,301	1,284	518,407	80,813	113,303	12,889	193,729	35,202	435,840	84.1	82,567	72,894	64,218	92,955
	11 mos.	510	9,392,293	17,992	9,606,036	1,300,541	1,236,171	146,874	2,649,554	375,096	5,699,645	59.3	3,906,391	3,371,181	3,046,880	4,556,267
Duluth, Missabe & Northern	Nov.	568	562,972	4,615	656,890	148,942	284,443	4,040	279,830	37,710	754,285	114.8	—97,395	19,952	23,948	133,332
	11 mos.	567	18,354,649	69,104	20,876,339	2,708,176	3,342,977	44,913	4,141,180	468,238	10,704,238	51.3	10,172,101	8,342,427	8,366,594	13,756,650
Duluth, Winnipeg & Pacific	Nov.	178	98,975	8,584	120,383	6,191	31,540	4,576	61,218	6,816	97,972	81.4	22,411	16,376	32,587	20,629
	11 mos.	178	1,416,701	119,971	164,117	306,318	403,706	54,628	710,431	81,998	1,591,000	96.6	56,117	—28,032	26,581	267,541
Elgin, Joliet & Eastern	Nov.	452	1,336,510	11	1,469,848	209,529	37,133	13,281	615,647	50,934	926,313	63.0	543,535	466,601	335,442	194,774
	11 mos.	452	18,478,961	2,482	20,403,640	2,473,100	3,244,580	173,348	7,812,463	592,012	14,283,840	70.0	6,119,800	4,881,646	3,135,391	5,537,895
Erie Railroad	Nov.	2,046	5,912,016	675,990	7,196,761	751,273	1,604,297	163,634	2,856,895	293,170	5,682,601	79.0	1,514,160	1,251,968	1,094,263	1,161,729
	11 mos.	2,046	72,495,455	8,662,984	88,768,927	11,084,451	19,712,786	1,945,197	34,230,934	3,290,858	70,637,558	79.6	18,131,369	13,894,397	12,810,308	18,000,437
Chicago & Erie	Nov.	269	962,372	39,443	1,073,788	131,803	153,065	27,062	309,605	41,482	661,821	61.6	411,967	381,778	75,763	202,167
	11 mos.	269	11,097,048	562,244	12,615,290	1,579,711	1,535,792	321,696	3,756,941	474,671	7,656,318	60.7	4,958,972	4,375,225	1,311,872	2,469,906

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
New Jersey & New York	Nov.	45	$21,490	$85,930	$111,211	$11,731	$21,777	$1,312	$58,500	$3,485	$96,804	87.0	$14,407	$10,075	—$19,219	—$24,178
	11 mos.	45	249,442	1,005,330	1,304,141	174,170	235,808	17,342	680,014	40,690	1,147,975	88.0	156,166	106,346	—225,809	—248,804
N. Y., Susquehanna & Western	Nov.	131	325,092	34,745	394,751	64,557	48,184	4,506	160,660	11,066	288,961	73.2	105,790	74,174	39,584	42,241
	11 mos.	131	3,521,158	427,898	4,339,182	580,238	507,360	53,345	1,830,916	129,444	3,101,004	71.5	1,238,178	890,732	596,475	570,806
Florida East Coast	Nov.	863	494,261	134,597	729,868	126,870	162,264	28,394	242,099	43,960	612,371	83.9	117,497	41,545	—1,789	—165,425
	11 mos.	863	5,969,231	3,276,295	10,685,303	1,659,780	2,054,262	327,832	3,276,847	497,578	7,991,343	74.8	2,693,960	1,428,426	748,268	1,403,556
Fort Smith & Western	Nov.	249	100,248	4,840	111,250	20,763	19,573	5,122	37,449	6,293	88,236	79.3	23,014	19,425	8,798	16,405
	11 mos.	249	1,097,463	70,577	1,240,696	239,438	241,134	60,438	425,724	70,872	1,028,118	82.9	212,578	167,536	51,631	101,862
Galveston Wharf	Nov.	13	.....	.....	169,882	32,043	4,397	3,717	25,053	7,282	88,381	52.0	81,501	58,211	58,204	81,433
	11 mos.	13	.....	.....	1,702,548	395,035	63,049	45,212	320,039	73,402	1,075,415	63.2	627,133	369,253	372,162	608,942
Georgia R. R.	Nov.	328	280,866	33,831	347,979	33,459	62,059	21,971	167,227	24,099	308,684	88.7	39,295	30,538	44,937	75,621
	11 mos.	328	3,538,092	445,316	4,318,745	487,821	823,930	245,156	1,890,558	251,980	3,696,872	85.6	621,873	522,160	677,671	861,142
Georgia & Florida	Nov.	468	121,011	3,543	131,479	25,242	27,179	9,757	49,715	7,829	119,801	91.1	11,678	11,678	9,266	—18,377
	11 mos.	489	1,452,265	58,193	1,588,941	357,048	251,193	112,742	570,452	89,229	1,382,512	87.0	206,429	119,302	93,004	132,158
Grand Trunk Western	Nov.	1,019	1,489,826	119,377	1,756,453	261,678	275,724	64,498	814,546	99,482	1,526,551	86.9	229,902	191,625	—10,643	19,685
	11 mos.	1,019	21,007,713	1,779,193	24,520,047	3,701,622	4,526,319	769,127	10,207,532	1,161,282	20,491,409	83.6	4,028,638	2,520,724	473,482	6,212,871
Atlantic & St. Lawrence	Nov.	166	108,976	15,823	139,742	21,690	34,666	5,393	84,299	13,742	161,037	115.2	—21,295	—33,749	—53,836	—101,546
	11 mos.	166	1,388,552	225,019	1,807,322	375,146	460,695	64,788	954,339	101,847	1,972,377	109.1	—165,055	—315,788	—822,622	—911,363
Great Northern	Nov.	8,362	7,246,398	567,880	8,474,210	642,890	1,275,778	207,795	2,736,578	221,365	5,113,432	60.3	3,360,778	2,701,745	2,464,774	2,942,599
	11 mos.	8,366	80,989,459	8,329,013	98,717,175	12,836,284	16,976,604	2,667,675	31,357,432	2,621,193	67,258,146	68.1	31,459,029	23,249,762	21,566,235	30,507,388
Green Bay & Western	Nov.	234	136,820	1,775	143,563	27,042	24,714	7,054	41,967	3,398	104,170	72.5	39,393	32,393	29,942	29,117
	11 mos.	234	1,541,231	29,222	1,631,367	288,066	246,752	69,289	586,460	32,851	1,222,994	74.9	408,373	312,298	259,496	303,006
Gulf & Ship Island	Nov.	307	109,521	17,485	142,345	41,704	22,854	4,322	75,688	6,524	153,029	107.5	—10,684	—44,768	—57,339	—42,820
	11 mos.	307	1,856,345	299,107	2,428,105	506,634	369,811	52,542	978,997	73,827	2,015,696	83.0	412,409	50,913	—99,482	—60,189
Gulf Mobile & Northern	Nov.	733	439,499	18,141	479,238	62,252	66,609	28,353	157,591	20,244	335,323	69.9	143,965	111,284	74,122	80,289
	11 mos.	733	5,062,334	234,347	5,536,026	939,240	887,290	325,542	1,805,104	275,006	4,235,401	76.5	1,300,625	957,879	611,193	1,352,384
Illinois Central	Nov.	5,018	7,024,038	1,164,893	8,926,466	877,687	1,765,575	226,183	3,705,814	341,888	6,978,768	78.2	1,947,698	1,479,306	1,395,614	1,233,140
	11 mos.	5,018	90,782,587	15,457,107	115,809,451	12,915,889	25,304,368	2,874,468	43,476,876	3,959,593	89,397,371	77.2	26,412,080	18,881,499	18,301,931	22,266,796
Yazoo & Mississippi Valley	Nov.	1,699	1,586,023	161,080	1,866,563	222,535	232,463	40,434	702,738	62,421	1,265,560	67.8	601,003	433,650	315,852	459,877
	11 mos.	1,705	17,936,754	2,384,910	21,708,819	3,078,910	3,512,637	493,118	8,353,072	711,832	16,197,173	74.6	5,511,646	3,662,913	2,489,206	2,804,099
Illinois Central System	Nov.	6,718	8,610,066	1,325,973	10,793,029	1,100,222	1,998,038	266,617	4,408,552	404,309	8,244,328	76.4	2,548,701	1,912,956	1,711,466	1,693,801
	11 mos.	6,723	108,769,420	17,858,278	137,584,614	15,994,799	28,839,076	3,367,586	51,864,636	4,672,223	105,652,101	76.8	31,932,513	22,547,856	20,794,581	25,089,712
Illinois Terminal	Nov.	554	421,146	96,185	542,672	66,399	81,470	20,096	192,497	37,219	396,566	73.0	146,106	111,757	80,929	104,728
	11 mos.	554	5,299,098	1,277,870	6,913,510	873,045	916,301	214,552	2,365,029	455,580	4,804,219	69.4	2,109,291	1,772,309	1,323,500	1,484,533
Kansas City Southern	Nov.	784	922,543	54,626	1,105,056	129,239	217,539	57,300	366,473	67,300	840,012	76.0	265,044	224,294	181,954	295,187
	11 mos.	784	13,294,495	736,780	15,589,272	1,811,376	2,660,852	692,547	4,658,590	853,392	10,714,820	68.7	4,874,452	3,807,231	3,208,656	3,877,689
Texarkana & Ft. Smith	Nov.	99	152,961	3,639	170,146	20,905	18,091	7,933	47,924	12,035	109,212	64.2	60,934	60,630	27,090	46,414
	11 mos.	99	2,046,679	55,739	2,356,834	287,216	237,019	96,733	604,765	137,375	1,403,667	59.6	953,167	856,958	465,826	905,613
Kansas, Oklahoma & Gulf	Nov.	326	262,237	1,570	269,522	34,568	25,914	13,470	60,895	10,774	141,649	52.6	127,873	103,914	81,051	108,519
	11 mos.	326	2,802,420	20,461	2,879,891	324,007	279,162	170,086	688,312	126,129	1,579,373	54.8	1,300,518	1,058,250	828,169	1,187,381
Lake Superior & Ishpeming	Nov.	161	104,582	498	120,666	23,565	26,275	541	38,457	6,321	94,952	78.7	25,714	8,916	7,169	64,301
	11 mos.	161	1,905,406	8,295	2,211,307	383,435	309,515	6,604	495,359	70,997	1,265,365	57.2	945,942	626,228	593,241	1,298,735
Lake Terminal	Nov.	12	.....	.....	70,734	14,277	10,033	.....	39,013	1,758	65,081	92.0	5,653	4,332	—2,651	6,775
	11 mos.	12	.....	.....	935,884	161,567	131,550	.....	468,381	24,937	786,435	84.0	149,449	102,572	51,584	188,368
Lehigh & Hudson River	Nov.	97	174,201	763	183,680	22,116	32,790	3,073	68,421	9,488	135,888	74.0	47,792	27,945	11,667	52,391
	11 mos.	97	1,957,870	11,393	2,079,350	260,878	334,579	37,485	744,773	110,262	1,497,977	71.6	591,373	416,872	238,562	439,271
Lehigh & New England	Nov.	216	402,114	731	408,454	54,112	84,937	5,000	140,505	34,536	319,063	78.1	89,391	77,310	70,801	71,949
	11 mos.	216	4,599,198	9,482	4,671,891	581,864	929,588	71,707	1,617,532	300,931	3,501,383	74.9	1,170,508	1,015,334	939,315	999,702
Lehigh Valley	Nov.	1,361	3,791,251	360,362	4,521,087	492,514	1,106,722	133,550	2,009,261	139,004	3,815,071	84.4	706,060	781,479	637,820	491,450
	11 mos.	1,361	46,559,956	5,090,559	56,123,732	5,410,436	12,191,678	1,566,046	23,282,505	1,567,953	44,322,357	79.0	11,801,385	8,881,645	7,720,635	11,944,989
Louisiana & Arkansas	Nov.	608	454,833	13,277	493,026	69,028	56,215	22,041	151,101	23,896	322,933	65.5	170,093	118,438	99,736	96,979
	11 mos.	618	6,039,879	206,062	6,540,260	976,694	987,772	243,117	1,923,280	289,639	4,420,112	67.6	2,120,148	1,598,504	1,184,738	1,257,960
Louisiana, Arkansas & Texas	Nov.	202	71,765	1,326	76,133	18,362	8,146	2,513	27,079	4,800	60,909	80.0	15,233	11,200	4,298	—22,457
	11 mos.	202	799,166	21,639	854,694	240,574	154,080	35,842	373,919	57,199	860,517	100.7	—5,823	—50,044	—168,697	—162,832
Louisville & Nashville	Nov.	5,249	7,218,946	760,367	8,557,864	1,182,436	1,938,743	245,718	2,852,033	346,068	6,589,712	77.0	1,968,152	1,485,368	1,513,441	1,446,588
	11 mos.	5,249	86,419,621	10,746,051	103,947,407	15,917,518	25,418,361	2,656,274	37,279,248	4,042,674	85,730,871	82.5	18,216,536	12,390,695	12,737,446	18,698,124
Maine Central	Nov.	1,121	1,043,010	149,972	1,314,080	204,989	245,481	15,008	551,138	48,478	1,064,382	81.0	249,698	167,124	123,155	321,304
	11 mos.	1,121	13,467,506	2,500,397	17,556,063	2,687,939	3,364,160	187,865	6,537,675	554,409	13,354,393	76.1	4,201,670	3,148,350	2,688,817	3,388,068

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Midland Valley	Nov.	363	$213,577	$3,775	$226,535	$38,445	$30,029	$5,640	$66,615	$11,729	$151,742	67.0	$74,793	$48,009	$29,687	$74,962
	11 mos.	363	2,685,007	61,715	2,836,196	426,746	325,260	61,349	702,124	138,650	1,647,502	58.1	1,188,694	1,014,556	826,138	967,211
Minneapolis & St. Louis	Nov.	1,628	831,864	37,651	929,280	84,966	188,060	35,395	432,995	45,373	787,040	84.7	142,240	75,684	8,675	15,700
	11 mos.	1,628	10,590,139	530,502	11,814,796	1,547,962	2,290,516	411,262	5,223,061	488,982	9,964,501	84.3	1,850,295	1,155,592	583,439	1,833,982
Minneapolis, St. Paul & S. S. Marie	Nov.	4,374	2,478,422	183,825	2,904,550	411,750	547,799	71,413	1,100,884	117,202	2,259,821	77.8	644,729	436,847	257,832	538,317
	11 mos.	4,391	31,191,055	3,164,853	37,473,724	5,494,819	7,189,430	877,720	13,849,003	1,371,553	28,999,760	77.4	8,473,964	5,905,364	4,226,931	8,261,552
Duluth, South Shore & Atlantic	Nov.	573	171,220	22,946	214,311	40,521	41,549	8,070	115,138	10,123	212,431	99.1	1,880	—33,120	—38,287	3,861
	11 mos.	573	2,856,780	371,597	3,523,983	665,931	666,931	91,305	1,496,233	116,183	3,057,800	86.8	466,183	90,255	348	406,792
Spokane International	Nov.	166	60,618	4,095	69,565	11,839	5,452	3,580	26,270	5,848	53,715	77.2	15,850	11,062	4,569	13,464
	11 mos.	166	751,164	66,480	884,379	186,424	80,098	38,210	306,401	65,885	686,917	77.7	197,462	142,025	79,877	231,109
Mississippi Central	Nov.	150	88,603	3,045	94,413	14,223	15,479	9,589	27,467	7,014	73,750	78.1	20,663	15,321	11,636	20,810
	11 mos.	150	1,137,061	51,966	1,230,197	215,254	235,441	108,772	354,210	88,878	1,016,559	82.6	213,638	149,595	125,655	347,530
Missouri & North Arkansas	Nov.	364	102,241	3,790	113,211	33,811	16,628	10,420	49,240	9,066	118,994	105.0	—5,783	—2,183	—21,714	17,156
	11 mos.	364	1,389,526	63,712	1,536,340	359,628	191,296	109,190	586,608	90,709	1,337,219	87.0	199,121	172,222	21,576	36,115
Missouri-Illinois	Nov.	202	135,077	920	138,458	32,061	29,659	3,461	39,754	6,369	111,304	80.4	27,154	24,681	13,979	35,531
	11 mos.	202	1,647,895	16,428	1,697,702	271,294	359,145	38,169	497,357	71,994	1,236,316	72.8	461,386	387,400	279,979	541,463
Missouri-Kansas-Texas Lines	Nov.	3,188	3,356,657	363,108	4,044,418	327,233	417,109	122,720	1,068,867	158,592	2,112,711	52.2	1,931,707	1,761,148	1,520,132	1,260,611
	11 mos.	3,188	34,081,963	4,547,277	42,325,380	5,254,486	6,707,065	1,364,520	12,959,541	1,833,208	28,241,950	66.7	14,083,430	11,849,036	9,390,117	11,258,369
Missouri Pacific	Nov.	7,449	7,500,555	659,521	8,916,189	1,106,001	1,675,536	265,531	3,319,662	354,242	6,665,368	74.8	2,250,821	1,883,302	1,490,283	2,004,063
	11 mos.	7,451	93,133,745	9,493,074	112,027,523	16,990,222	19,717,700	3,244,622	39,283,894	4,169,501	83,088,453	74.2	28,939,070	23,915,305	19,252,312	23,177,878
Gulf Coast Lines	Nov.	1,026	760,388	86,326	917,382	115,894	182,128	43,178	342,944	60,216	745,035	81.20	172,347	123,735	60,134	208,548
	11 mos.	1,026	12,260,098	1,230,118	14,331,880	2,281,154	2,508,755	494,285	3,790,182	684,111	9,714,665	67.78	4,617,215	4,083,039	3,146,801	2,862,728
International-Great Northern	Nov.	1,159	868,944	120,662	1,113,941	174,986	181,323	36,935	514,352	67,048	981,000	88.0	132,941	89,140	19,855	46,303
	11 mos.	1,159	11,070,996	1,527,985	14,034,303	2,263,433	2,486,280	459,356	5,775,835	779,224	11,847,148	84.4	2,187,155	1,706,855	806,402	2,126,911
San Antonio, Uvalde & Gulf	Nov.	318	91,459	11,617	111,627	30,647	23,040	5,680	37,292	6,805	102,241	91.6	9,386	4,366	—23,863	—42,162
	11 mos.	318	1,388,405	161,574	1,675,841	423,888	211,142	65,150	454,149	82,747	1,225,281	73.1	450,560	398,.349	99,746	18,978
Mobile & Ohio	Nov.	1,152	847,337	45,540	949,659	170,709	193,863	58,436	421,947	48,247	890,115	93.7	59,543	—28,975	—92,293	96,044
	11 mos.	1,158	11,624,467	684,082	13,049,037	2,046,547	2,434,033	618,982	5,026,513	545,960	10,644,950	81.6	2,404,087	1,440,257	740,297	2,436,402
Monongahela	Nov.	177	448,990	3,258	455,012	49,000	58,000	1,442	129,949	11,648	250,000	54.9	205,012	191,798	99,932	173,917
	11 mos.	177	5,541,921	56,821	5,641,399	794,000	688,000	14,644	1,486,399	117,254	3,090,189	54.8	2,551,210	2,351,189	1,265,185	1,913,270
Monongahela Connecting	Nov.	7	.....	.....	103,357	12,319	33,597	300	56,924	3,005	106,145	102.7	—2,788	—6,954	—8,062	7,111
	11 mos.	7	.....	.....	1,751,152	204,017	368,112	3,327	790,945	31,110	1,397,511	79.8	353,641	267,697	204,734	477,456
Montour	Nov.	57	204,413	.....	205,067	19,179	42,933	1,547	63,975	7,480	135,114	65.9	69,953	68,178	76,444	49,443
	11 mos.	57	2,379,806	363	2,387,795	302,151	545,426	16,018	602,606	91,050	1,556,420	65.2	831,375	811,848	915,304	865,698
Nashville, Chattanooga & St. Louis	Nov.	1,203	1,076,720	132,245	1,348,569	219,992	319,559	68,584	559,537	72,465	1,244,566	92.3	104,003	53,992	40,164	270,300
	11 mos.	1,203	14,461,053	1,955,015	18,021,900	2,739,075	3,825,990	857,650	6,856,076	852,324	15,195,379	84.3	2,826,521	2,108,539	2,035,408	4,664,048
Nevada Northern	Nov.	165	39,586	2,323	47,347	12,141	5,673	958	14,315	4,738	37,825	79.9	9,522	925	2,788	43,108
	11 mos.	165	585,970	31,739	693,453	136,196	63,952	11,236	157,302	51,634	420,763	60.7	272,690	175,711	187,487	591,337
Newburgh & South Shore	Nov.	7	.....	.....	101,594	21,745	29,479	....	45,423	6,800	103,447	101.8	—1,853	—9,633	—6,636	24,466
	11 mos.	7	.....	.....	1,270,336	157,430	176,905	....	584,297	70,287	988,919	77.8	281,417	120,181	147,598	394,932
New Orleans Great Northern	Nov.	264	165,028	10,078	183,466	30,609	35,589	13,011	57,112	9,181	146,502	79.9	36,964	21,754	—6,138	7,900
	11 mos.	276	2,362,833	146,776	2,594,229	329,996	435,844	145,015	821,832	117,271	1,847,576	71.2	746,653	580,375	257,327	404,652
New Orleans Terminal	Nov.	20	4,662	.....	209,736	17,329	13,985	....	49,544	1,073	81,931	39.1	127,805	116,546	105,046	44,926
	11 mos.	20	25,017	.....	1,579,844	191,209	165,443	....	596,140	17,912	970,704	61.4	609,140	485,296	463,169	438,520
New York Central	Nov.	11,477	22,635,143	7,683,609	34,923,970	5,072,871	7,939,721	780,973	13,631,161	1,320,833	29,322,797	84.0	5,601,173	3,033,753	1,946,404	6,058,783
	11 mos.	11,477	285,480,819	102,435,615	443,604,763	59,961,982	95,653,360	8,868,602	160,736,845	15,231,791	347,364,131	78.3	96,240,632	63,934,741	54,235,683	98,167,812
Indiana Harbor Belt	Nov.	120	.....	.....	830,904	115,000	90,000	4,144	367,382	34,099	622,318	74.9	208,586	167,383	129,834	229,369
	11 mos.	120	.....	.....	10,052,768	1,019,000	1,076,000	53,693	4,162,997	347,028	6,818,926	67.8	3,233,842	2,713,693	2,286,884	3,212,499
Pittsburgh & Lake Erie	Nov.	231	1,613,985	127,730	1,797,710	165,037	504,109	29,662	708,690	79,440	1,496,207	83.2	301,503	202,628	519,077	477,835
	11 mos.	231	23,229,845	1,638,246	25,676,650	2,771,388	7,352,433	400,386	8,654,969	871,173	20,162,830	78.5	5,513,820	3,889,676	6,978,835	7,459,474
New York, Chicago & St. Louis	Nov.	1,690	3,218,498	132,447	3,485,498	465,753	625,643	113,413	1,366,600	124,989	2,695,374	77.3	790,124	567,076	217,889	591,203
	11 mos.	1,690	39,903,984	1,825,577	43,417,546	5,852,994	8,174,769	1,380,736	15,860,382	1,404,670	32,623,750	75.1	10,793,796	8,452,337	5,535,628	10,193,063
N. Y., New Haven & Hartford	Nov.	2,121	5,031,562	3,277,601	9,374,409	1,182,643	1,352,712	86,341	3,040,220	290,251	6,119,043	65.3	3,255,366	2,859,392	2,232,749	3,266,909
	11 mos.	2,128	58,432,341	38,859,702	109,868,724	15,655,160	16,668,056	1,105,244	35,168,216	3,439,941	74,038,403	67.4	35,830,321	29,455,483	22,950,680	30,657,876
New York Connecting	Nov.	20	185,679	.....	207,830	14,054	12,181	....	35,291	848	62,374	30.0	145,456	109,331	81,435	118,251
	11 mos.	20	2,042,092	.....	2,325,895	210,644	124,569	....	375,983	18,015	729,211	31.4	1,596,684	1,200,931	911,901	1,147,164
New York, Ontario & Western	Nov.	568	471,409	26,767	622,940	19,819	168,889	12,882	305,631	27,468	536,922	86.2	86,018	50,976	—6,114	—114,980
	11 mos.	568	6,753,430	1,363,257	9,719,621	1,359,646	1,913,963	182,065	4,134,838	335,146	7,863,568	80.9	1,856,053	1,402,801	866,687	865,963

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Norfolk & Western	Nov.	2,240	$7,228,836	$248,966	$7,722,914	$896,257	$1,492,210	$128,034	$1,941,603	$254,778	$4,715,731	61.1	$3,007,183	$2,256,786	$2,517,511	$4,173,983
	11 mos.	2,240	86,749,793	3,565,568	93,526,128	11,322,626	17,657,556	1,435,653	22,394,290	2,790,799	55,717,691	59.6	37,808,437	28,703,435	31,127,356	40,666,340
Norfolk Southern	Nov.	932	481,426	15,623	525,978	72,826	77,163	27,037	217,759	23,735	409,122	77.8	116,856	61,362	51,707	103,873
	11 mos.	932	5,826,067	251,569	6,416,065	924,830	949,938	317,542	2,528,307	289,623	4,992,478	77.8	1,423,587	850,435	693,618	1,238,920
Northern Pacific	Nov.	6,785	5,378,693	489,900	6,457,270	467,032	1,301,017	182,910	2,243,224	252,159	4,532,910	70.2	1,924,360	1,456,535	1,835,738	2,050,033
	11 mos.	6,784	60,775,912	7,127,756	75,108,274	9,429,116	15,807,246	2,571,376	26,274,276	2,847,733	58,186,400	77.5	16,921,874	9,750,031	13,336,647	20,383,407
Northwestern Pacific	Nov.	441	198,451	100,343	333,193	92,970	61,961	6,146	200,881	25,384	385,870	115.8	—52,677	—88,547	—97,564	—44,178
	11 mos.	450	3,348,185	1,444,386	5,243,214	1,118,610	938,621	77,835	2,330,294	190,029	4,645,319	88.6	597,895	201,704	106,446	390,485
Oklahoma City-Ada-Atoka	Nov.	129	61,440	1,925	66,302	13,016	5,832	1,067	18,586	3,328	41,630	62.8	24,672	19,922	8,406	—24,835
	11 mos.	129	735,169	47,692	820,117	255,038	82,929	13,926	262,552	40,531	650,752	79.2	169,365	121,053	—21,654	—28,331
Pennsylvania Railroad	Nov.	10,878	30,773,405	7,971,806	42,940,025	5,217,879	8,280,618	827,128	16,633,529	1,630,307	33,139,421	77.2	9,800,604	6,762,387	5,277,727	7,294,408
	11 mos.	10,878	375,530,778	106,959,319	535,803,340	65,423,572	103,030,763	9,442,659	195,941,928	18,507,530	398,946,323	74.5	136,857,017	101,240,701	87,250,387	129,602,881
Long Island	Nov.	404	883,838	1,909,704	2,954,624	309,236	438,358	15,532	1,240,566	60,068	2,063,789	69.8	890,835	705,247	483,180	255,447
	11 mos.	404	9,705,443	25,112,168	36,691,389	4,275,588	4,819,368	246,073	14,085,694	724,293	24,155,664	65.8	12,535,725	9,524,578	7,671,980	8,302,232
Peoria & Pekin Union	Nov.	19	11,293	571	120,023	7,480	9,061	4,974	55,505	7,523	84,543	70.4	35,480	14,637	43,516	29,295
	11 mos.	19	161,973	10,145	1,510,378	233,750	148,500	58,385	665,753	87,345	1,193,733	79.0	316,645	128,785	396,238	466,005
Pere Marquette	Nov.	2,264	2,295,598	126,130	2,584,789	357,886	534,529	69,112	1,049,973	100,806	2,106,950	81.5	477,839	322,168	202,689	43,416
	11 mos.	2,251	30,852,983	2,024,754	34,972,277	4,950,180	7,112,864	830,156	12,770,215	1,250,425	26,929,395	77.0	8,042,882	6,257,026	4,666,402	9,402,584
Pittsburgh & Shawmut	Nov.	102	82,857	2,006	86,430	10,130	18,862	1,323	26,153	17,617	74,085	85.6	12,345	11,771	11,891	29,498
	11 mos.	102	1,020,310	39,021	1,079,764	143,283	241,747	18,234	319,806	83,261	806,331	74.7	273,433	261,922	283,753	328,641
Pittsburgh & West Virginia	Nov.	92	241,676	2,535	272,031	39,008	72,627	16,886	56,535	24,081	218,602	80.4	53,429	46,102	83,517	143,610
	11 mos.	92	3,249,704	31,957	3,584,037	317,223	815,214	210,592	672,001	236,627	2,358,584	65.8	1,225,453	912,342	1,480,571	2,182,679
Pittsburgh, Shawmut & Northern	Nov.	198	112,551	500	115,986	22,074	23,849	1,478	43,162	7,246	97,809	84.3	18,177	15,408	12,307	30,495
	11 mos.	198	1,402,578	8,952	1,451,138	320,988	288,407	18,909	492,782	75,618	1,196,704	82.6	254,434	223,294	147,606	251,755
Quincy, Omaha & Kansas City	Nov.	249	61,285	3,909	70,686	18,319	5,965	1,129	26,964	2,435	54,564	77.2	16,122	11,437	8,995	—35,006
	11 mos.	249	590,059	59,420	716,503	281,799	80,032	9,706	282,824	27,666	679,346	94.8	37,157	—14,450	—43,762	—100,433
Reading	Nov.	1,455	5,838,178	441,073	6,753,022	994,385	1,627,776	78,603	2,675,362	215,755	5,615,903	83.2	1,137,119	1,311,480	1,363,950	1,592,032
	11 mos.	1,458	69,249,329	5,464,157	80,031,255	12,336,908	19,502,393	1,047,314	30,884,672	2,458,525	66,488,327	83.1	13,542,928	11,070,142	11,252,895	15,828,448
Atlantic City	Nov.	163	93,836	50,367	157,921	54,120	19,057	4,416	145,759	3,930	227,403	144.0	—69,482	—110,796	—124,534	—104,615
	11 mos.	163	1,195,514	1,464,217	2,874,297	759,401	243,006	43,939	1,869,888	54,535	2,972,105	103.4	—97,808	—551,324	—754,765	—63,490
Richmond, Fredericksburg & Potomac	Nov.	117	396,597	191,301	724,117	60,844	146,396	8,182	281,081	33,929	543,228	75.0	180,889	139,053	81,439	112,064
	11 mos.	117	4,783,325	2,902,926	9,462,010	1,288,031	1,846,262	114,292	3,399,053	426,592	7,309,827	77.2	2,152,183	1,673,806	1,120,038	2,135,580
Rutland	Nov.	413	225,787	59,823	387,462	65,314	77,379	10,304	168,042	15,964	338,920	87.5	48,542	27,566	32,215	64,846
	11 mos.	413	2,925,635	824,753	4,913,033	894,196	963,473	125,478	1,963,259	184,818	4,148,732	84.4	764,301	509,065	575,741	963,879
St. Louis-San Francisco	Nov.	5,261	4,253,183	517,934	5,240,029	585,539	874,943	127,060	1,908,870	212,156	3,739,405	71.4	1,500,624	1,140,737	1,134,673	1,546,630
	11 mos.	5,269	53,213,286	7,564,471	66,301,693	9,335,738	11,894,025	1,408,092	22,799,972	2,466,022	46,848,630	70.7	19,453,063	15,480,324	15,579,174	19,535,606
Ft. Worth & Rio Grande	Nov.	233	48,807	4,668	58,973	24,864	Cr. 342	2,710	34,969	1,272	58,135	98.6	838	—3,720	—9,475	—9,801
	11 mos.	233	624,350	46,763	757,221	235,854	151,461	32,730	421,810	45,230	880,039	116.2	—122,818	—172,086	—264,954	—149,984
St. Louis, San Francisco & Texas	Nov.	262	174,436	8,650	191,227	5,018	21,381	6,233	59,399	7,467	97,333	50.9	93,894	89,538	62,517	33,968
	11 mos.	262	1,581,048	101,999	1,764,526	296,547	253,849	68,821	646,062	167,663	1,428,428	81.0	336,098	291,029	—29,999	78,853
St. Louis Southwestern Lines	Nov.	1,913	1,333,184	50,118	1,498,554	260,423	232,579	102,428	570,750	82,516	1,253,805	83.7	244,749	166,732	68,712	215,760
	11 mos.	1,837	18,151,940	805,580	20,449,440	3,159,414	3,182,445	1,204,235	7,686,666	1,019,914	15,760,288	77.1	4,689,152	3,693,923	2,159,856	3,406,694
San Diego & Arizona	Nov.	155	43,563	8,386	53,876	12,661	13,901	3,066	19,292	7,235	57,235	106.2	—3,359	—8,931	—6,606	11,096
	11 mos.	155	757,834	173,067	960,609	173,113	180,347	40,323	269,356	85,607	762,619	79.4	197,990	137,667	150,077	255,556
Seaboard Air Line	Nov.	4,487	3,311,155	386,449	4,025,447	601,678	822,395	188,713	1,471,184	156,959	3,271,867	81.3	753,580	562,937	455,485	795,334
	11 mos.	4,496	36,113,254	5,205,925	45,681,865	6,289,405	8,488,340	2,177,518	16,958,711	1,858,354	36,192,133	79.2	9,489,732	6,180,255	5,514,319	9,896,403
Southern Ry.	Nov.	6,731	6,939,512	1,078,707	8,797,363	1,118,040	1,577,971	209,173	3,329,323	333,935	6,632,290	75.4	2,165,073	1,551,780	1,415,634	1,954,339
	11 mos.	6,731	84,951,197	15,744,851	109,776,492	16,107,886	20,670,400	2,552,910	38,626,842	3,958,394	82,736,488	75.4	27,040,004	19,195,613	17,700,179	27,957,905
Alabama Great Southern	Nov.	314	443,604	70,968	556,915	90,747	132,732	17,803	213,559	22,775	483,199	86.8	73,716	32,193	31,281	91,669
	11 mos.	314	5,763,509	1,069,387	7,368,399	1,346,869	1,679,972	212,091	2,408,887	262,362	5,977,439	81.1	1,390,969	838,474	1,008,859	2,259,202
Cinn., New Orleans & Tex. Pac.	Nov.	338	1,073,696	130,509	1,279,299	147,695	323,565	37,526	424,673	52,235	990,987	77.4	289,212	200,921	195,557	156,951
	11 mos.	338	13,914,625	1,893,690	16,740,371	2,723,504	3,778,966	440,521	4,964,902	583,903	12,591,887	75.2	4,148,484	3,161,187	3,161,926	3,590,406
Georgia Southern & Florida	Nov.	397	162,145	40,118	222,492	19,596	54,723	1,577	96,500	360	175,711	79.0	46,781	32,049	36,421	15,844
	11 mos.	397	2,330,278	720,208	3,310,159	650,267	724,668	22,993	1,221,263	31,069	2,704,548	81.7	605,611	347,293	338,422	400,907
New Orleans & Northeastern	Nov.	204	249,261	35,392	309,360	52,894	65,058	10,492	110,671	13,734	256,056	82.8	53,304	18,150	2,438	10,997
	11 mos.	204	3,161,994	522,767	3,953,225	632,507	780,566	119,961	1,287,210	157,140	3,015,658	76.3	937,567	473,775	195,833	824,218
Northern Alabama	Nov.	110	73,366	2,718	78,493	17,833	2,936	1,581	25,122	2,860	50,332	64.1	28,161	23,915	7,410	19,704
	11 mos.	110	857,780	36,316	924,078	211,002	36,536	21,965	311,050	33,433	613,949	66.4	310,129	250,552	49,480	182,966

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Southern Pacific	Nov.	9,130	$10,035,746	$2,252,771	$13,449,191	$1,694,386	$2,097,252	$329,544	$4,889,164	$609,134	$9,861,075	73.3	$3,588,116	$2,539,984	$2,122,731	$2,768,920
	11 mos.	9,125	129,054,138	31,590,174	175,820,946	21,472,740	29,100,802	4,433,791	58,138,151	7,148,292	123,116,624	70.0	52,704,322	38,350,655	33,247,231	45,796,586
So. Pacific Steamship Lines	Nov.	....	503,952	31,343	574,983	21,065	118,051	17,844	429,669	32,106	618,735	107.6	—43,752	—45,088	—45,126	—119,184
	11 mos.	....	6,314,729	571,716	7,356,427	213,755	1,653,529	235,781	5,173,705	423,613	7,700,383	104.7	—343,956	—358,904	—338,572	—216,896
Texas & New Orleans	Nov.	4,721	3,809,721	543,961	4,802,605	623,202	735,156	155,006	1,568,127	243,483	3,344,189	69.6	1,458,416	1,127,301	903,464	1,078,959
	11 mos.	4,721	45,447,209	7,629,025	57,638,406	8,815,221	10,601,016	1,916,020	18,900,292	2,821,337	43,148,827	74.9	14,489,579	10,822,900	7,844,387	11,221,555
Spokane, Portland & Seattle	Nov.	554	469,084	49,058	563,197	85,734	86,018	11,850	195,721	23,157	402,931	71.5	160,266	73,657	76,031	167,145
	11 mos.	554	5,913,345	801,836	7,342,826	1,136,654	1,076,360	140,907	2,355,468	256,545	5,027,250	68.5	2,315,576	1,360,028	1,204,089	2,198,995
Tennessee Central	Nov.	295	202,252	8,398	222,849	30,456	32,994	8,625	86,355	14,014	172,172	77.3	50,677	44,991	26,469	30,977
	11 mos.	295	2,584,392	113,704	2,846,623	515,949	441,339	101,702	1,007,389	153,515	2,213,901	77.8	632,722	556,614	365,187	489,359
Terminal R. R. Assn. of St. Louis	Nov.	55	.....	.....	722,715	112,118	65,099	3,182	359,875	26,246	569,748	78.8	152,967	40,677	118,600	177,347
	11 mos.	55	.....	.....	9,479,95-	1,440,187	888,388	34,308	4,415,922	286,528	7,100,186	74.9	2,379,766	1,163,549	2,133,495	3,307,969
Texas & Pacific	Nov.	1,955	2,316,751	287,918	2,828,212	459,268	474,982	83,148	928,885	120,194	2,071,520	73.2	756,692	631,652	500,658	741,626
	11 mos.	1,955	28,097,448	4,082,938	34,711,647	5,143,594	5,736,995	969,231	11,057,663	1,388,348	24,333,953	70.1	10,377,694	8,561,669	6,528,059	8,322,399
Texas Mexican	Nov.	162	62,911	2,339	71,814	4,091	11,087	3,469	36,978	7,552	62,587	87.1	9,227	4,219	138	—4,861
	11 mos.	162	891,316	35,263	1,032,392	160,452	171,343	37,259	429,138	88,477	872,571	84.5	159,821	104,477	27,806	102,019
Toledo, Peoria & Western	Nov.	239	170,088	111	173,579	17,251	17,982	15,193	54,357	8,083	112,866	65.0	60,713	54,913	43,231	—9,241
	11 mos.	239	1,822,354	2,589	1,867,761	208,248	239,893	157,784	684,001	101,390	1,391,298	74.5	476,463	400,517	291,440	416,155
Toledo Terminal	Nov.	28	.....	.....	97,554	7,580	12,896	571	40,085	4,630	65,748	67.4	31,806	21,451	41,670	29,588
	11 mos.	28	.....	.....	1,075,372	144,529	172,585	6,341	496,894	54,911	874,614	81.3	200,758	57,907	282,213	556,215
Ulster & Delaware	Nov.	128	31,381	1,298	65,248	13,938	11,736	1,223	36,347	3,742	66,98-	102.7	—1,738	—5,938	—8,292	—4,992
	11 mos.	128	364,207	154,188	916,997	153,490	149,083	15,552	460,487	43,235	821,847	89.6	95,150	33,250	3,927	42,243
Union R. R. of Penna.	Nov.	45	.....	.....	496,178	165,924	154,743	138	260,423	14,139	595,285	120.0	—99,107	—28,639	32,517	449,482
	11 mos.	45	.....	.....	8,447,832	1,124,061	1,846,136	1,779	3,536,985	163,429	6,668,473	78.9	1,779,359	1,577,927	2,269,141	3,886,847
Union Pacific	Nov.	3,765	7,507,568	806,545	8,996,761	642,828	1,889,469	167,499	2,624,485	331,967	5,784,559	64.3	3,212,202	2,628,802	2,085,322	2,350,821
	11 mos.	3,765	80,286,914	11,435,942	100,427,277	9,730,506	20,099,168	2,014,081	28,519,040	3,670,012	65,775,335	65.5	34,651,942	27,586,058	23,760,988	27,881,786
Oregon Short Line	Nov.	2,537	2,686,744	189,247	3,064,116	298,696	440,508	49,861	883,811	123,387	1,835,381	59.9	1,228,735	977,876	840,007	942,721
	11 mos.	2,538	26,340,135	2,719,503	31,501,221	4,737,957	4,872,888	607,075	9,296,872	1,386,679	21,353,308	67.8	10,147,913	6,905,075	5,680,370	8,165,555
Oregon-Wash. R. R. & Nav. Co.	Nov.	2,336	1,568,776	140,567	1,897,932	252,395	243,693	71,755	746,488	118,184	1,461,416	77.0	436,516	245,336	142,047	295,156
	11 mos.	2,358	18,613,702	2,066,284	22,870,264	3,970,120	3,352,181	846,226	8,556,614	1,354,937	18,332,483	80.2	4,537,781	2,432,065	1,239,432	2,167,708
Los Angeles & Salt Lake	Nov.	1,229	1,351,077	192,258	1,690,208	269,355	250,973	75,353	572,109	82,345	1,301,404	77.0	388,804	235,331	114,516	358,725
	11 mos.	1,229	15,629,790	3,427,005	21,094,469	3,198,764	3,419,786	880,229	6,702,372	933,024	15,863,593	75.2	5,230,876	3,575,906	2,159,015	4,281,903
St. Joseph & Grand Island	Nov.	258	282,049	4,959	294,306	31,458	33,725	3,138	95,144	16,541	180,046	61.2	114,260	93,738	63,665	73,096
	11 mos.	258	3,166,758	79,549	3,365,097	474,141	397,368	37,163	1,110,203	184,263	2,216,346	65.9	1,148,751	928,226	647,619	730,823
Utah	Nov.	111	203,806	.....	205,070	27,915	40,405	363	45,950	5,678	120,307	58.7	84,763	67,789	53,763	88,354
	11 mos.	111	1,470,011	.....	1,476,877	242,389	371,716	4,063	359,323	65,749	1,043,101	70.6	433,776	336,546	191,705	532,435
Virginian	Nov.	561	1,249,059	15,138	1,340,196	127,243	200,192	13,619	297,309	29,389	666,959	49.8	673,237	513,237	594,199	825,545
	11 mos.	554	14,880,557	227,174	16,018,848	1,648,466	2,829,558	160,319	3,323,152	357,721	8,314,598	51.9	7,704,250	5,897,228	6,699,467	8,006,055
Wabash	Nov.	2,523	3,703,470	351,127	4,385,716	485,786	647,970	180,294	1,792,422	101,262	3,236,220	73.8	1,149,496	940,347	538,844	697,045
	11 mos.	2,523	48,278,401	4,940,053	57,269,130	7,259,609	9,628,829	2,082,268	22,512,962	2,353,739	44,070,314	77.0	13,198,816	10,815,413	6,819,357	12,516,198
Ann Arbor	Nov.	293	393,823	10,335	418,192	39,941	68,155	13,718	175,503	16,461	312,214	74.7	105,978	80,054	48,284	77,563
	11 mos.	293	4,374,282	127,191	4,684,809	453,687	885,185	157,979	1,927,697	169,128	3,589,479	76.6	1,095,330	806,043	506,852	963,760
Western Maryland	Nov.	896	1,330,981	9,626	1,385,611	203,865	252,670	42,458	361,808	64,383	935,628	67.5	449,983	369,983	374,652	570,418
	11 mos.	895	15,278,826	159,376	16,419,884	2,405,797	3,039,865	480,126	4,280,703	493,585	10,706,374	65.2	5,713,510	4,743,510	4,850,247	5,374,588
Western Pacific	Nov.	1,051	1,153,307	47,077	1,283,732	66,608	200,686	63,013	504,599	46,457	911,125	71.0	372,607	301,995	293,089	207,268
	11 mos.	1,051	12,912,587	1,032,695	15,292,543	2,463,501	2,422,420	759,857	5,476,213	536,444	12,168,329	79.6	3,124,214	2,078,637	1,941,126	2,453,325
Wheeling & Lake Erie	Nov.	511	1,003,841	13,515	1,087,561	108,908	318,514	35,401	348,030	44,240	855,195	78.6	232,366	125,987	135,664	193,178
	11 mos.	511	14,280,328	170,572	15,474,169	1,791,750	3,826,600	407,759	4,578,992	484,518	11,097,566	71.7	4,376,603	2,958,936	3,082,285	4,955,927
Wichita Falls & Southern	Nov.	203	59,880	78	61,769	16,549	8,916	3,041	21,089	3,694	51,807	83.87	9,962	4,778	—450	31,130
	11 mos.	203	794,732	4,049	844,134	164,069	109,935	31,613	267,998	47,514	609,068	72.15	235,066	177,375	115,794	239,793

News

(*Continued from page 163*)

The American Association of Railway Advertising Agents will hold its annual meeting at the Union League Club, Chicago, on January 17.

The Railway Club of Pittsburgh (Pa.) will hold its next meeting on Thursday evening, January 22, at Fort Pitt Hotel. Thomas H. Queer, of the Pittsburgh Coal Company, will present a paper, illustrated by motion pictures, on the modern coal industry.

The next regular monthly meeting of the Western Railway Club, scheduled to be held Monday evening, January 19, at the Hotel Sherman, Chicago, will be devoted to a consideration of various aspects of the mechanical cooling and conditioning of air in passenger equipment, with a view to providing greater comfort of passengers and thus tending to increase the volume of passenger traffic. The principal paper of the evening will be presented by L. L. Lewis, representing the Carrier Engineering Corporation, Newark, N. J., on the subject, "Air Conditioning of Passenger Train Cars." His paper will be illustrated with lantern slides.

Reorganization Funds Held Not Subject to I. C. C. Regulation

The Supreme Court of the United States, in a decision rendered on January 5, held that the Interstate Commerce Commission had no jurisdiction over part of the fund contributed by stockholders of the old Chicago, Milwaukee & St. Paul, in connection with its reorganization, to provide for the compensation of the reorganization managers and other expenses. The court upheld the decision of the district court for the northern district of Illinois which had enjoined the commission from enforcing a condition which it had imposed in connection with its authorization of security issues under the reorganization. The fund was created by a private contract between the stockholders and the reorganization committee which was not a matter of interstate commerce and it is held therefore to be outside the federal jurisdiction.

The reorganization plan provided that out of payments to be made by the stockholders for which they were to receive stock and bonds in the new company, the Chicago, Milwaukee, St. Paul & Pacific, $4 a share was to be set aside, and of this $1.50 a share was specifically set aside for the compensation and expenses of the reorganization managers. The commission, however, attached a condition to its order requiring that the fund created by the $4 a share should be impounded by the new company in a separate fund and not be paid out except on authority of a court or the commission. The railroad brought suit for an injunction saying that the commission had threatened criminal or civil proceedings against it for violation of the condition. The Supreme Court says that while the commission may attach conditions relating to the issuance of securities the power to impose such conditions is not unlimited and that the commission had attempted to lay its hands upon and control the disposition of a fund created by contract between private persons to which the carrier was not a party.

Justice Holmes and Brandeis concurred in a dissenting opinion by Justice Stone.

Superintendents Select Subjects

At a recent meeting of the executive committee of the American Association of Railroad Superintendents, the following subjects were assigned to various committees for investigation and report at the next annual convention, to be held in St. Louis in June:

Committee 2: Handling merchandise. Expediting merchandise schedules. Operation of night way freight trains. Advantages of road crews performing station switching. T. M. Flynn, chairman, superintendent, Northern Pacific, Minneapolis, Minn.

Committee 3: Are yard air lines necessary and, if so, what benefits may be derived from them? How can delays to transfer engines be reduced? A. M. Umshler, chairman, terminal superintendent, Illinois Central, Chicago.

Committee 4: Adoption of standard operating rules. Elimination of useless rules from the Standard Code. Train rules governing operation of trains over double track in either direction. S. H. Shults, chairman, chief train rules examiner, Chicago, Burlington & Quincy, Galesburg, Ill.

Committee 5: Car retarder operation in small yards. N. A. Ryan, chairman, superintendent of terminals, Chicago, Milwaukee, St. Paul & Pacific, Milwaukee, Wis.

Committee 6: Fuel performance. Economies in road and yard engine operation. Hand-fired power plants. H. C. Rochester, chairman, office assistant to vice-president, Canadian National, Montreal, Que.

Committee 7: The duties of a superintendent. Proper organization of subordinates. Public relations. W. H. Haley, chairman, assistant general superintendent of transportation, Missouri Pacific, St. Louis, Mo.

Committee 8: Heavier loading. Car service rules. Co-operating with shippers for clean cars. A. P. Stevens, chairman, district manager, car service division, American Railway Association, New York.

Committee 9: Traffic solicitation. F. E. Summers, chairman, superintendent, Atchison, Topeka & Santa Fe, Emporia, Kan.

Special Committee: Use of air brake cars with dynamometer features. Educating employees as to the meaning of axle capacity. R. A. Black, chairman, engineer of transportation, Canadian National, Montreal, Que.

Special Committee: Functions of a chief dispatcher. Train dispatchers' problems. E. M. Price, chairman, chief dispatcher, Northern Pacific, Seattle, Wash.

Special Committee: Efficiency tests. Insuring compliance with train rules. Train rules education. F. L. Goodman, chairman, trainmaster, Chicago, Burlington & Quincy, Centralia, Ill.

Special Committee: Motor and airplane competition. M. F. Steinberger, chairman, manager highway transportation, Baltimore & Ohio, Baltimore, Md.

Buses and Trucks in Pacific Southwest

The motor truck and bus are playing a significant part in the transportation system and general economic development of the Pacific Southwest, it is stated in a report of the United States Commerce Department covering a general commercial survey of this area recently completed. A total of 250,706 motor trucks were in operation in the five southwestern states of Arizona, California, New Mexico, Nevada and Utah in 1929, the report shows, in addition to buses and passenger automobiles turned to commercial use.

Over some areas as large as such eastern states as Maryland and Massachusetts motor trucks are the sole means of commercial transportation, yet the development of motor services is such that it may be said that no place is too remote to have some motor-driven vehicle operating for hire, ranging from the private car owned by a mountain resident to the most palatial bus on the highways. These with their variations, it is stated, give this area a rural transportation system in many cases as well developed as any to be found in the United States.

The position of motor traffic in Arizona is cited as typical of the place of motor services in the transportation system of western United States. A great many communities find it necessary to depend upon motor-truck services in marketing their output from farms and mines and in securing their supplies from railway points as much as 100 miles distant. The motor truck in such sections frequently serves not only as the vehicle of passenger and freight transportation, but also as distributor of the mails. In these areas it is not uncommon for the merchant to receive flour, sugar, canned goods, clothing and many other lines from wholesale centers by parcel post.

New York Court Decides Grade Crossing Wage-Law Case

The law of the State of New York, passed in 1930, (now Article 8-A of the labor law) which is a regulation of wages and hours of labor of men engaged in work on grade crossing elimination, is the subject of a decision, accompanied by a lengthy statement, by Justice E. J. Staley of the Supreme Court, in the Third Judicial District (Albany). This suit, in which the plaintiffs are the nine principal railroad companies of the state, was based on the claim of the railroads that the new law, requiring all such labor to be paid for at the prevailing rate of wages and subject to the law limiting work to eight hours a day, would largely increase the cost of the proposed work and would be an unconstitutional taking of the railroad companies' property without due process of law.

Judge Staley in his decision, handed down on January 2, sustains the validity of the law in so far as it applies to private contractors, but he holds that the act does not apply to workmen engaged in this work directly in the employ of the railroad corporations; this for the reason that Congress has taken action regulating hours of labor, thereby bringing the work of railroad employees under the Federal law instead of the laws of the State of New York.

The decision restrains the officers of the state from requiring the railroads to obey the new law, so far as concerns railroad employees who are subject to the Federal labor laws. It is understood that the railroads will appeal the case to the higher court. The Public Service Commission of the State has authority to say whether crossing work shall be done directly by a railroad or through a contractor; and it is understood to be the rule that any improvement involving an ex-

Continued on Next Left Hand Page

This Traveling Power Plant Cuts Operating Costs

OPERATING conditions today demand the pulling of heavier trains at higher speeds.

Only by using locomotives capable of producing higher horsepower can train movement be speeded up without reducing tonnage.

Super-Power Steam Locomotives haul heavier trains faster; shorten the railroad and increase its capacity; reduce the number of locomotives necessary for a given operation; reduce train movement costs; reduce maintenance costs; and save fuel.

332 LIMA Super-Power Steam Locomotives have been purchased as the result of demonstrated reduction in operating costs.

LIMA LOCOMOTIVE WORKS
Incorporated
LIMA, OHIO

penditure of $10,000 must be carried out by contract. This would leave but a small number of contracts, now in course of execution, which would be affected by that part of the decision which is favorable to the railroads.

The New York Central, the Erie, the Delaware & Hudson and the New Haven roads some weeks ago agreed with representatives of the state that work on crossing improvements now unfinished would not be suspended on account of this litigation—this for the purpose of insuring employment to as many men as possible.

Twelve Roads Agree To Use N. Y. Terminal

(Continued from page 160)

originating on or destined to points on the Reading."

The agreement itself stipulates among other things, that:

"The carriers will establish and operate a Union Inland Freight Station through the medium of an organization to be selected by them and to act for all of the carriers, and will specify said Station in their tariffs as a freight Station for the receipt and delivery of l. c. l. freight at their respective tariff rates; they will further promote the use of said Station and keep the same open for the receipt and delivery of freight during such hours as in their judgment will facilitate the handling of the traffic.

"The carriers further agree not to sub-divide the Station between individual carriers or groups of carriers insofar as shippers and consignees are concerned. The charges which the carriers shall make for transportation services rendered or to be rendered in connection with the operation of said Station shall be the charges provided for in their respective tariffs as duly filed with the Interstate Commerce Commission.

"The Port Authority undertakes to commence the construction of and to rent to the carriers on the same or substantially similar terms space in two additional Union Inland Freight Stations at sites mutually agreed upon and to complete the first within 16 months after receiving a notice in writing from the carriers requesting the construction of such additional Union Inland Freight Station, and to complete the second within 16 months after receiving a notice requesting the construction of such second additional Union Inland Freight Station; but such notice for such second additional station shall not require its completion earlier than 16 months after the completion of the first additional station.

"In the event of the transfer of the entire property ot any of the carriers or ot their franchises respectively by consolidation, lease, merger or otherwise pursuant to law, then the rights, interests, obligations and liabilities of such carrier or carriers under this lease shall be deemed to follow the transfer of such properties and franchises respectively."

The agreement further covers all points relating to the installation of equipment or other property; details of management and operation of the building; compliance with all Federal, local and other governmental laws, etc.

Service to shippers and consignees of package freight will be conducted on the street floor with no interference to normal street traffic, the shippers and consignee's trucks being berthed within the building inside the street lines. Since but two floors can be reasonably dedicated to freight purposes the carrying charges on the cost of land assignable to freight purposes must be reduced. This will be accomplished by the utilization of the upper floors for other purposes, a percentage of the rental accruing from these upper floors being credited to fixed charges on the cost of the land. Above the street floor the Port Authority will construct 14 floors for commercial purposes, and, on the Eighth avenue front, high class metropolitan office space.

Work on demolition of buildings on the site of the new terminal has already been started by the Port Authority, under contract with the Klosk Contracting Company, New York, as reported in the *Railway Age* of December 27, and is to be completed within 60 days, at which time additional construction contracts will be awarded.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 5605, Grand Central Terminal Building, New York City. Next meeting, May 19-22, 1931, Royal York Hotel, Toronto, Ont. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next convention, June 16-18, 1931, West Baden Springs, Ind.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J. 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—A. G. Peck, Acting Secretary, 811 W. 35th Street, Kansas City, Mo. Next meeting June 16-19, 1931, St. Louis, Mo.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—J. H. Hawley (B. R. & P. Ry.) E. Salamanca, N. Y.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York. Next convention, September 26 October 2, 1931. Atlantic City, N. J.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.
Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.
Freight Station Section. — R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.
Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.
Protective Section.—J. C. Caviston, 30 Vesey St., New York.
Safety Section.—J. C. Caviston, 30 Vesey St., New York.
Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York
Division II.—Transportation.—G. W. Covert, 59 East Van Buren St., Chicago.
Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.
Division IV—Engineering.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 10-12, 1931, Palmer House, Chicago. Exhibit by National Railway Appliances Association.
Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 10-12, 1931, Palmer House, Chicago.
Electrical Section—E. H. Fritch.
Signal Section.—R. H. C. Balliet, 30 Vesey St., New York.
Division V.—Mechanical.—V. R. Hawthorne, 59 East Van Buren St., Chicago. Next meeting, June, 1931.
Equipment Painting Section.—V. R. Hawthorne, 59 East Van Buren St., Chicago.
Division VI.—Purchases and Stores.— W. J. Farrell, 30 Vesey St., New York, N. Y.
Division VII.—Freight Claims.—Lewis Pilcher, 59 East Van Buren St., Chicago.
Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York, N. Y.
Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 20-22, 1931, Toronto, Ont. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. W. Large, Gen. Agri. Agt., C. R. I. & P. Ry., Chicago, Ill. Annual meeting, 1931, Philadelphia, Pa.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association, Division IV.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 10-12, 1931, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS ASSOCIATION.—Miss E. Phillips, N. Y., N. H. & H. Magazine, New Haven, Conn. Next meeting, June, 1931, Philadelphia, Pa.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Next convention, September, 1931. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Assistant Secretary, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Paul D. Mallay, Johns-Manville Corp., 292 Madison Ave., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Next meeting, January 27-29, 1931, Philadelphia, Pa.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, June 17-19, 1931, Royal York Hotel, Toronto, Ont.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—J. F. Gettrust, Ashton Valve Company, 565 Washington Blvd., Chicago. Meets with International Railway General Foremen's Association.

BOILERMAKERS' SUPPLY MEN'S ASSOCIATION.—Frank C. Hasse, Oxweld R. R. Service Company, 230 N. Michigan Ave., Chicago. Meets with Master Boiler Makers' Association

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—S. A. Baber, High Grade Manufacturing Co., 10418 St. Clair Ave., Cleveland, Ohio. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 203 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, 2nd Monday in each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago. Exhibit by Supply Men's Association.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, 3001 W. 39th Place, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 So. Main St., Los Angeles, Cal. Regular meetings, second Monday of each month, except July, August and September, Room 299, 610 So. Main St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegman, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, American Hotel Annex, 6th and Market Sts., St. Louis, Mo.

CENTRAL RAILWAY CLUB OF BUFFALO.—T. J. O'Donnell, 1004 Prudential Building, Buffalo, N. Y. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 453 E. 6th St., Cincinnati, Ohio. Meetings 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden. Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, August 18-20, 1931, Cleveland, Ohio. Exhibit of International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION. — J. H. Jones, Crucible Steel Company of America, 650 Washington Blvd., Chicago. Meets with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. T. Winkless, Room 700 La Salle Street Station, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St. Winona, Minn. Next convention, March 25-28, 1931, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—C. M. Huffman, Dearborn Chemical Co., 310 So. Michigan Ave., Chicago. Meets

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Over 1100
Modern Road Engines *Save Fuel* by LIMITED CUT-OFF

EXPANSIVE use of steam is a fundamental principle of fuel economy.

■ Limited Cut-Off enforces the constant use of this principle and thus radically reduces fuel consumption without impairing hauling power.

■ Over 1100 Super-Power locomotives, built to reduce operating costs, have used this principle as a fundamental part of their design.

■ The Limited Cut-Off provides fuel economy at low speeds and makes possible higher power at the higher speeds. It restores the factor of adhesion that is disturbed by the larger cylinders and high boiler pressure used to increase power at speeds. It also provides a bigger port opening at high speeds which means increased power.

■ The Limited Cut-Off materially assists the locomotive designer in securing more power per pound of weight. It is automatic and requires no operating attention or maintenance.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

with International Railway Fuel Association.

MASTER BOILER MAKERS ASSOCIATION—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Next convention, May 12-15, 1931, Hotel Sherman, Chicago. Exhibit by Boiler Makers' Supply Men's Association.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—(See Car Department Officers' Association.)

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual convention, 1931, Richmond, Va.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy. M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo. Annual convention, May 5-7, 1931, West Baden Springs Hotel, West Baden, Ind.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: J. L. Walsh, Supt. Safety, M.-K.-T. R. R., Dallas, Tex. Annual congress, October 12-16, 1931, Hotel Stevens, Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. I. McKay, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August, 29 W. 39th St., New York City.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1124 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W Noxon, 1112 Shoreham Building, Washington, D. C.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa. Regular meeting, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Store Division and Motor Transport Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division 1.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Next convention, September 22-24, 1931, Hotel Stevens, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Drawer 24, M. P. O., St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November. Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. Ry., Atlanta, Ga. Annual meeting, January 15, 1931, Chattanooga, Tenn.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson. W. H. Miner, Inc., 667 The Rookery Building, Chicago. Meets with Car Department Officers' Association.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O. Next convention March 25-28, 1931, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 343 So. Dearborn St., Chicago. Regular meetings 3rd Monday each month, except June, July and August.

Equipment and Supplies

FREIGHT CARS

THE SOLVAY PROCESS COMPANY is inquiring for from 10 to 13 hopper bottom stone cars, of 75 tons' capacity.

THE CARNEGIE STEEL COMPANY has ordered 30 gondola cars of 70 tons' capacity from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 27.

THE CANADIAN NATIONAL has placed orders for 3,700 freight cars as follows: For 1,000 steel frame box cars of 50 tons' capacity ordered from the National Steel Car Corporation; 1,700 steel frame box cars of 50 tons' capacity from the Canadian Car & Foundry Company; 500 composite general service cars of 50 tons' capacity and 500 composite drop end gondola cars of 70 tons' capacity from the Eastern Car Company. Inquiry for this equipment was reported in the *Railway Age* of December 6.

PASSENGER CARS

THE INDIANA SERVICE CORPORATION has ordered 21 interurban cars from the Pullman Car & Manufacturing Corp. and 14 from the American Car & Foundry Co. Inquiry for this equipment was reported in the *Railway Age* of October 18.

IRON AND STEEL

THE CENTRAL OF NEW JERSEY has ordered 13,249 tons of rail of 100-lb. and 130-lb. sections from the Bethlehem Steel Company.

THE LOUISVILLE & NASHVILLE has ordered 50,750 tons of 100-lb. rails from the Tennessee Coal, Iron & Railroad Company.

THE DELAWARE, LACKAWANNA & WESTERN has placed an order with the Bethlehem Steel Company covering the rolling of 3,000 tons of 130-lb. rail and fittings, for January delivery.

Pennsylvania Orders 200,000 Tons of Rail

The Pennsylvania has placed orders for 200,000 tons of steel rail for use during 1931. The contracts were divided as follows:

Carnegie Steel, 60,000 tons, Illinois Steel Company, 40,000 tons, Bethlehem Steel Company 88,000 tons, and Inland Steel Company 12,000 tons. At current prices the order for the rails will total $8,500,000, while additional expenditures for attachments including frogs and switches, tie plates, joint bars, bolts and spikes will raise the total cost of rail and rail laying material, exclusive of ties, to more than $15,000,000.

President W. W. Atterbury in a statement announced that the Pennsylvania's rail laying program for 1931 will insure the maintenance of its track in the very best condition. The track and road-bed are now in excellent shape. The company is making some experiments with certain modification in the design of its present rail which it expects to result in still greater safety and speed under heavy loads. The rail improvement program will go forward vigorously, with rail renewals over the entire system and heavier rail replacing present rail in main tracks.

Approximately 15 per cent of the 200,000 ton order is for immediate delivery, the remainder to be available for use as needed during the year.

SIGNALING

THE CHICAGO & ILLINOIS MIDLAND has contracted with the Union Switch & Signal Company for the installation of an electric interlocking, Type F, at North Grand Avenue, Springfield, Ill., the crossing of the Wabash. The machine will be Style M-2, of 23 levers.

Car Retarders for Stanley Yard

The New York Central has contracted with the General Railway Signal Company for the installation of a G-R-S electric car retarder system at the northbound yard at Stanley, Ohio, near Toledo. This yard has 42 classification tracks and the order includes 20 retarders and 43 switch machines. There will be three control machines in three towers. About 780,000 cars, largely coal, were moved through this yard in the year 1929.

Supply Trade

H. E. Passmore has been appointed assistant to the president of the **Verona Tool Works** with headquarters at Oakmont, Pa.

The American Chain Company, Inc., moved its Boston, Mass., office on January 5, from 132 High street to the Statler building.

Roland N. Jessop has been appointed assistant sales manager of the **Ohio Electric Manufacturing Company,** Cleveland, Ohio.

L. F. Rains, vice-president of the Columbia Steel Corporation, has been elected president of the **A. M. Byers Company,** Pittsburgh, Pa.

Herbert M. Orschel has been appointed field sales manager for the **Aeroil Burner Company, Inc.,** New York, and will cover the United States and Canada.

M. D. Miller, president of the **Railroad Water & Coal Handling Company,** Chicago has also been elected vice-president of the **T. S. Leake Construction Company,** Chicago.

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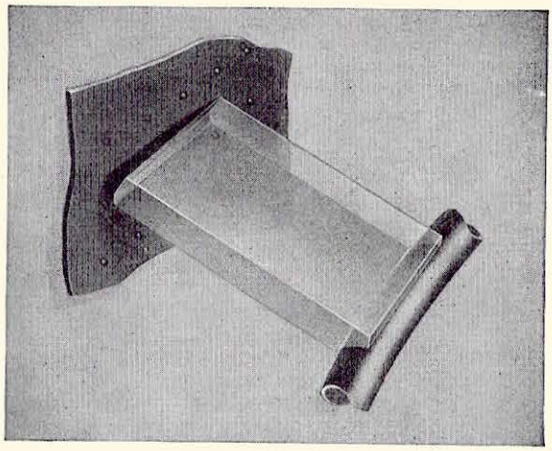
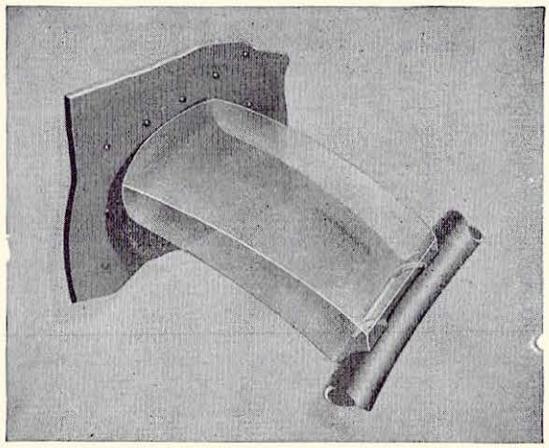
There's More To Security Arches Than Just Brick





A Stable Support: Compare the Bevelled End Arch Brick with the square end brick above it. Note the superior stability resulting from the contact of the Bevelled End with the side sheet.

"A TROUBLE-SAVER" Developed by American Arch Company

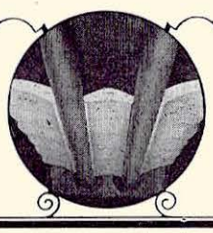
Making it easy to do a repair job saves trouble for the workman and saves money for the road.

"Sled-Runner End" Brick made it easy for the Arch gang to get a stable support for side brick without chipping and fitting—a laborious and time eating job.

This development of American Arch Company is just one result of the varied benefits that concentration on the subject of locomotive Arches has given the railroads.

By studying every step from brick manufacture to performance in service, American Arch Company has brought the Locomotive Arch to its present high state of development. This work has had a real dollars and cents value and is still in process.

Harbison-Walker Refractories Co.
Refractory Specialists



American Arch Co.
INCORPORATED
Locomotive Combustion Specialists

Harry S. Ransom, special representative of the sales and engineering department of the **Fort Pitt Steel Casting Company,** McKeesport, Pa., has been appointed manager of sales.

F. W. Deppe, district sales representative at St. Louis, Mo., of the **Reading Iron Company,** Reading, Pa., has been appointed general manager of sales with offices at 230 Park avenue, New York.

T. K. Quinn, Cleveland, Ohio, and **Charles E. Wilson,** Bridgeport, Conn., have been elected vice-presidents of the **General Electric Company; H. H. Barnes, Jr.,** New York, has been appointed a commercial vice-president in charge of the New York district, and **J. L. Buchanan,** Bridgeport, Conn., has been appointed president of the **General Electric Supply Corporation. Charles E. Patterson,** vice-president in charge of the merchandise department of the General Electric Company and **Cummings C. Chesney,** one of the two vice-presidents in charge of manufacturing, have retired.

James K. Aimer has been appointed assistant general manager of sales in charge of railroad, locomotive and car equipment sales, also bar iron and billets sales for the **Reading Iron Company,** Reading, Pa. Mr. Aimer's headquarters are at 230 Park avenue, New York. In addition to the supervision and direction of all sales to railroads, Mr. Aimer will direct the sales of Reading charcoal iron boiler tubes, formerly under the direction of **George H. Woodroffe,** metallurgical engineer. Mr. Woodroffe will now handle all complaints and serve in an advisory capacity to the general sales organization with respect to technical problems.

OBITUARY

A. M. Hunt, contracting engineer of the Standard Stoker Company, died on December 9th at San Francisco, Cal.

William S. Bartholomew, former vice-president of the Westinghouse Air Brake Company and former vice-president of the Locomotive Stoker Company, died in Pittsburgh, Pa., January 7th.

George Shields, eastern sales manager for The Dayton Manufacturing Company, Dayton, Ohio, with office at 25 Church street, New York City, died on December 25. Mr. Shields was with The Dayton Manufacturing Company for the past ten years, prior to which he was with the American Car Company, St. Louis.

George A. Ferguson, senior member of the Ferguson & Edmondson Company, railroad contractors, Pittsburgh, Pa., died at his home in Shinnston, W. Va., on December 21 at the age of 66. Mr. Ferguson had been engaged in railroad construction practically all his life, having started his career in Iowa in the seventies. He was the last of the Ferguson brothers who took a prominent part in railroad construction in the West and middle West.

Construction

CANADIAN PACIFIC.—This company has awarded to Anglin-Norcross, Ltd., a contract for the construction of a new station at Park avenue, Montreal, Que. The new building, which will replace the present Park avenue station, and will cost well over $500,000, is designed to serve the northern sections of Montreal and Outremont. Located at the head of Park avenue and facing Jean Talon street, the station is also at the junction of the Canadian Pacific tracks from Place Viger and Windsor street stations. It will be 234 ft. long by 87 ft. deep, and three stories high, of combined classical and modern architecture, and of stone and marble construction, and will be furnished with all necessary conveniences for the use of passengers. Ample parking space will be provided in the approaches, and various railway offices will be accommodated in the upper floors. The platform, 30 ft. wide and located between the two railroad tracks, will be reached by a subway 135 ft. long, communicating with the concourse and eliminating the present level crossing at the site of the station. Express and milk platforms, and an express office, located in a separate building at such a point as to be readily accessible for both railroad and street traffic, are also included in the plans. The contractors are expected to begin work at once, and the station is to be in service by October of this year.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract for the construction of a reinforced concrete center pier for a new plate girder bridge over the Sioux river at Sioux Falls, S. D., has been awarded to the Sioux Falls Construction Company, Sioux Falls.

CITY OF BUFFALO.—The Public Service Commission of New York has designated for elimination the Tifft street grade crossings, at Buffalo, N. Y., of the New York Central, Pennsylvania, Erie, Lehigh Valley, New York, Chicago & St. Louis, Buffalo, Rochester & Pittsburgh, and South Buffalo. The street, located in a railroad yard district, is to be carried over the yards on an elevated viaduct.

DELAWARE, LACKAWANNA & WESTERN.—This company has awarded to E. T. Muntz, Buffalo, N. Y., contracts for grade separation work at two points on its lines, involving the elimination of grade crossings on Painted Post-Campbell state highway 5211, 0.64 mile west of the station at Painted Post, N. Y., and on Bath-Avoca state highway 5204, two miles west of Kanona station, Avoca, Steuben County, N. Y. The two projects involve about 2,300 cu. yd. of excavation, 42,000 cu. yd. of grading, the placing of 4,500 cu. yd. of concrete and 460,000 lb. of reinforcing steel, and the laying of 5,000 sq. yd. of concrete and macadam pavement. The Public Service Commission of New York has also designated for elimination the grade crossing of the Lackawanna at Plank road, 2.8 miles northwest of Jamesville station, Onondaga, N. Y. It is expected that preliminary plans for this work will be completed and bids called in 30-45 days.

MISSOURI PACIFIC.—A contract for the construction of a one-story brick and concrete passenger station at Valley Park, Mo., has been awarded to the Moss Construction Company, St. Louis, Mo.

MISSOURI PACIFIC.—A contract for the grading and culvert construction for the revision of grades on 30 miles of line between Delavan, Kan., and Gypsum City has been awarded to the List Construction Company, Kansas City, Mo. A contract for the bridge work involved in this grade revision has been let to the Industrial Construction Company, St. Louis, Mo.

NEW YORK, ONTARIO & WESTERN.—The Meadowbrook road crossing of this company's tracks in Cornwall, N. Y., has been designated for elimination by the Public Service Commission of New York. The project involves an expenditure of about $104,000, to carry the highway over the railroad tracks at a point just south of the present crossing.

NORTHWESTERN PACIFIC.—A contract has been let to the Healy-Tibbets Construction Company, San Francisco, Cal., by the California state highway commission for the construction of a plate girder bridge and pile trestle over the tracks of this company and Richardson bay near Manzanita, Cal. The cost of this construction is estimated at $330,000.

PENNSYLVANIA.—This company has awarded to the Ferguson & Edmondson Company, Pittsburgh, Pa., a contract for the construction of an overhead bridge, costing about $223,000, at Wierton, W. Va.; and to the Colianni & Dire Company, Chicago, a contract for grading and track work, to cost $26,500, in connection with the separation of grades of the tracks of the Pittsburgh, Cincinnati, Chicago & St. Louis, a Pennsylvania subsidiary, and West Eighty-Third street, Chicago. A grade crossing on this company's line at Union Road, West Seneca, N. Y., has been designated for elimination by the Public Service Commission of New York. The elimination, estimated to cost $294,668, involves carrying the highway under the railroad.

TERMINAL RAILROAD ASSOCIATON.—The general contract for the construction of the Merchandise Mart at Twelfth, Thirteenth, Spruce and Poplar streets, St. Louis, Mo., has been awarded to the Gamble Construction Company, St. Louis, at a cost of about $2,500,000. This contract includes all sub-contracts except plumbing, heating and electric wiring. The total cost of the building will be approximately $5,000,000.

UNION PACIFIC.—Bids will be closed on December 29 by the Nebraska Department of Public Works at Columbus, Neb., for the construction of a viaduct over the tracks of this company at Columbus. The structure will require 4,543 cu. yd. of reinforced concrete and 750,000 lb. of reinforcing steel.

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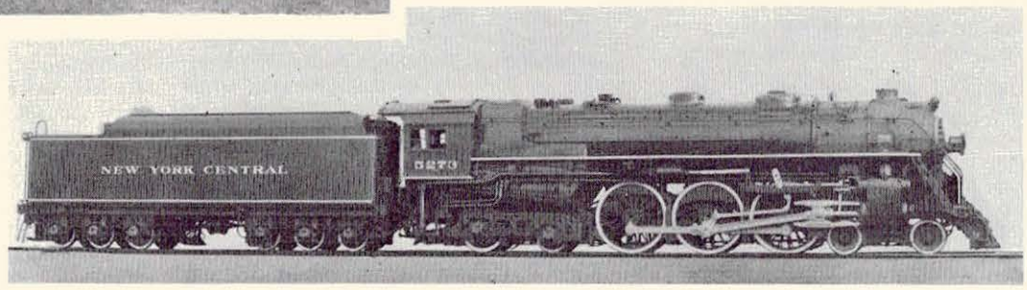
ALCO BUILT



Weight on Drivers, 188,500 pounds; Weight of Engine, 351,000 pounds; Cylinders, 25 x 28 inches; Diameter of Drivers, 79 inches; Boiler Pressure, 225 pounds; Maximum Tractive Power with Booster, 53,200 pounds.

An order for 40 more Hudson type locomotives has recently been received.

Compared with previous engines used in same service, the Hudson type combines greater starting tractive force, a substantial increase in cylinder horsepower capacity with the maximum output delivered at much higher speeds, a boiler of ample capacity to satisfy the cylinder requirements even under adverse conditions, weight distribution of such character as to keep rail stresses and rail impact loads within much lower limits, the avoidance at high speeds of high maximum and more or less isolated trailing wheel loads per pair of wheels, and firing rates within economical limits even under maximum power conditions.

A total of 225 Hudson types are now in service or under order for the New York Central Lines.

American Locomotive Company

30 Church Street New York N.Y.

Railway Finance

ATCHISON, TOPEKA & SANTA FE.—*Stock.*—The North Plains & Santa Fe, which has applied to the Interstate Commerce Commission for authority to build a line from Amarillo to a point in Dallam county, Tex., 100 miles, has applied to the commission for authority to issue 5,000 shares of common stock to the Santa Fe for cash at par, the proceeds to be used for construction purposes.

CORNWALL.—*Tentative Recapture Report.*—The Interstate Commerce Commission has issued a tentative recapture report and order directing this company to pay to the government $51,123 as the unpaid balance of excess net railway operating income amounting to $185,237 as stated in the report for the period March 1, 1920, to December 31, 1925.

KANKAKEE & SENECA. *Bonds.*—The Interstate Commerce Commission has authorized this company to issue $704,000 of general mortgage, series A, bonds, $650,000 of which is for retirement of a like amount of maturing first mortgage bonds and $54,000 in reimbursement for capital expenditures the bonds to be delivered in equal shares to the Cleveland, Cincinnati, Chicago & St. Louis and the Chicago, Rock Island & Pacific.

LIGONIER VALLEY. *Tentative Recapture Report.*—The Interstate Commerce Commission has issued a tentative recapture report and order directing this company to pay to the government $10,964 as the unpaid balance of its excess net railway operating income amounting to $74,129, as computed in the report, for the period March 1, 1920, to December 31, 1926.

NEW YORK CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized the Cleveland, Cincinnati, Chicago & St. Louis to issue $5,000,000 of refunding and improvement mortgage, series E, bonds to be delivered to the New York Central in reimbursement for expenditures in respect of maturing indebtedness to the subsidiary company.

PENNSYLVANIA.—*Bonds.*—The Interstate Commerce Commission has authorized the Connecting Railway, a P.R.R. subsidiary, to issue $2,023,000 of first mortgage 4½ per cent bonds to be delivered to the parent company in satisfaction of indebtedness.

PENNSYLVANIA.—*Revised Plan For Terminal Rental.*—This company and the Long Island have submitted to the Interstate Commerce Commission for its approval a revised plan for increasing the rental to be paid by the Long Island for the use of Pennsylvania terminal facilities in New York city, to supersede the present agreement and also to take the place of a proposed contract dated December 13, 1928, which the commission declined to approve, on various grounds, on March 18, 1930. The commission objected, among other things to the proposed payment of a rental based on 6 per cent interest on a proportion of the investment in the terminal property and the revised agreement provides for a rate of 5¼ per cent and omits from the investment all of the terminal building above the track level. It is also proposed that the operating and maintenance expenses of the terminal be apportioned on a fixed percentage basis representing the proportionate use, as determined by a time study, one-fifth to the Long Island and four-fifths to the Pennsylvania, instead of on a wheelage basis, as in the former agreement. The supplemental application states that the rental to be paid by the Long Island annually on the proposed basis is $3,413,000, as against $2,372,000 on the present basis and $3,969,000 on the basis of the agreement which the commission declined to approve. The plan was opposed by the Long Island Commuters' Association on the ground that the increased rental would pave the way for a possible effort of the Long Island to increase its fares. The original application was for a certificate authorizing the Long Island to operate over the tracks of the Pennsylvania Tunnel & Terminal, which is leased to the Pennsylvania, under the proposed trackage rights agreement. In support of its request for approval of a rate of 5¼ per cent the application refers to the "deliberate conclusion" of the commission in the general rate case that 5¼ per cent is a fair return on the value of railroad property and states that if the Pennsylvania kept the whole for its own use it would be entitled to earn 5¼ per cent on it, so that it ought not to be compelled to accept less. It also pointed out that as a matter of fact that interest is to be based in this case on original cost, which is less than the valuation placed on the property by the commission.

ROSCOE, SNYDER & PACIFIC.—*Proposed Recapture Report.*—The Interstate Commerce Commission has made public a report proposed by Examiner R. T. Boyden as to the valuation of this company's property by years for the period March 1, 1920, to the end of 1927, and recommending findings by the commission that the company has earned excess net railway operating income for that time amounting to about $275,000. These conclusions are reached after a statement of valuations for the various years considerably less than those claimed by the company and after a readjustment of its reported net railway operating income. The cost of reproduction new is estimated on the basis of period prices and the report omits the tables as to estimated original cost less depreciation which have been used in many reports to average with the cost of reproduction less depreciation, but the final figures indicate that the same method has been used. The report contains a new feature in that it includes recognition of a contention made by the carrier in this case and by other carriers in other cases that, if the usual basis for deducting depreciation is used in estimating the valuation, the net railway operating income should be reduced by the difference between the amount of depreciation found by the commission and the amount already charged to income on its books. The company had contended that the Bureau of Accounts had not permitted it to charge to operating expenses depreciation on certain road accounts upon which depreciation is computed and deducted from cost of reproduction new by the Bureau of Valuation, and through its witness H. J. Saunders, consulting engineer, had prepared an estimate of the annual depreciation in each road and equipment account, except land. While the examiner reported that these figures were excessive, he said that the Bureau of Accounts had not permitted the respondent to charge to operating expenses depreciation in roadway accounts, and that as the values found for its property reflect depreciation computed on all roadway accounts as well as equipment "adjustment should be made in net railway operating income in order that the sums found herein to be recapturable shall include no sums properly chargeable to operating expenses." An adjustment was correspondingly made. The report recommended that the commission should find that the record does not justify the omission of any part of the salaries of the president, or vice-president from the operating expenses during the recapture periods. Counsel for the Bureau of Finance had questioned the justification for increasing these salaries to $12,000 a year in view of the fact that these officers had other business interests.

ST. LOUIS-SAN FRANCISCO.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $3,886,100 of prior lien mortgage 5 per cent, series B, bonds to be pledged with the trustee of its consolidated mortgage; to issue $543,500 of refunding mortgage bonds under a refunding mortgage to the Kansas City, Fort Scott & Memphis, to be pledged with the trustee of its consolidated mortgage. Upon pledge of the above bonds, the company is authorized to issue $6,766,000 of its consolidated mortgage 4½ per cent, series A, bonds for the purpose of reimbursing its treasury for capital expenditures and refunding purposes, $6,346,750 thereof to be pledged and repledged as security for short term notes and the balance to be placed in its insurance fund.

TONOPAH & TIDEWATER.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $10,000 of $10-par stock to be exchanged for a like number of shares of $100-par stock, under the condition that the $900,000 reduction in capitalization shall be reflected by equivalent credit to investment in road and equipment.

Average Prices of Stocks and of Bonds

	Jan. 6	Last week	Last year
Average price of 20 representative railway stocks.	88.31	81.12	126.94
Average price of 20 representative railway bonds..	93.75	92.16	92.90

Dividends Declared

Atchison, Topeka & Santa Fe.—Common, $2.50, quarterly, payable March 2 to holders of record January 30.

Delaware, Lackawanna & Western.—$1.50, quarterly, payable January 20 to holders of record January 3.

Norfolk & Western.—Adjustment preferred, $1.00, quarterly, payable February 19 to holders of record January 31.

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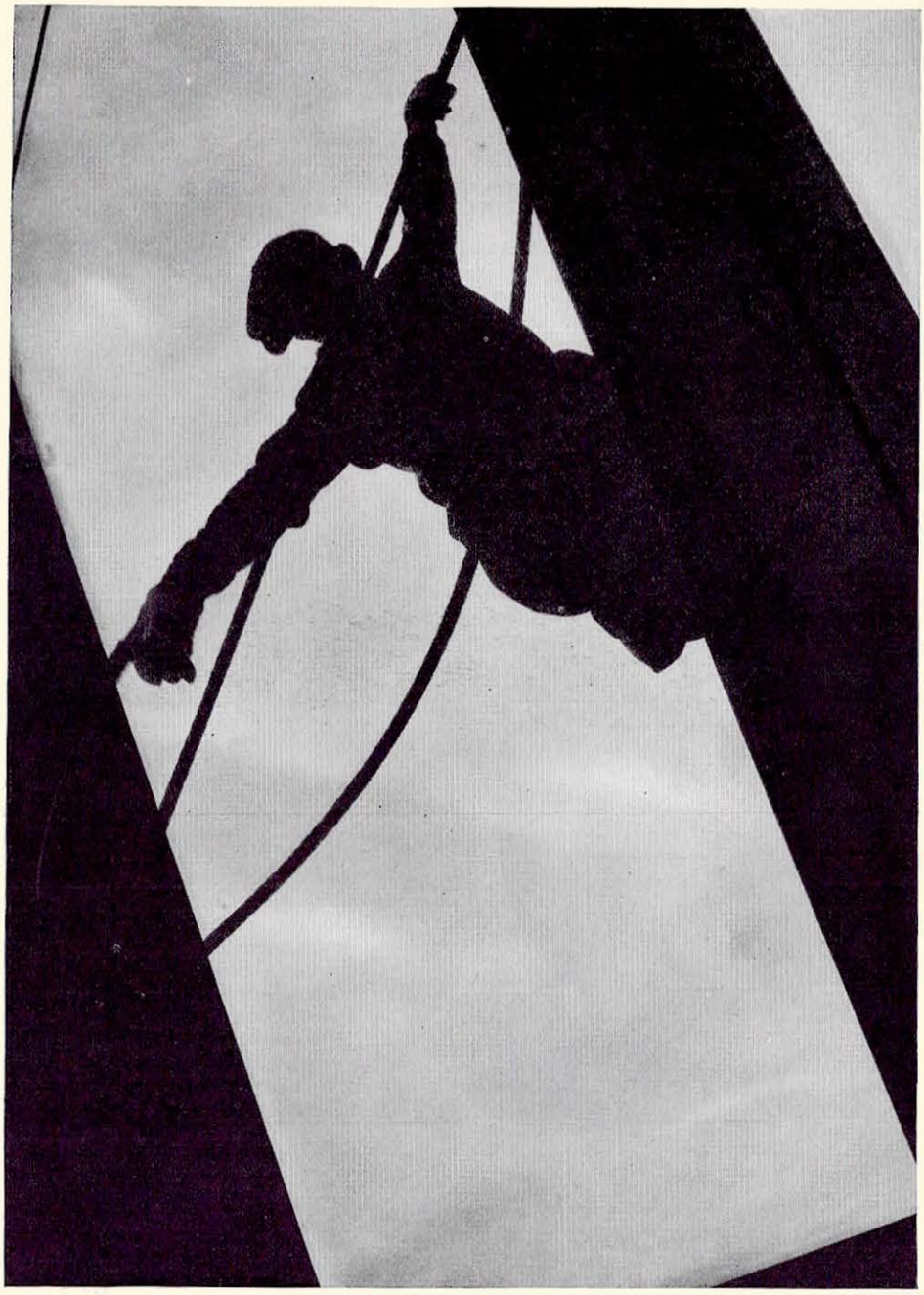

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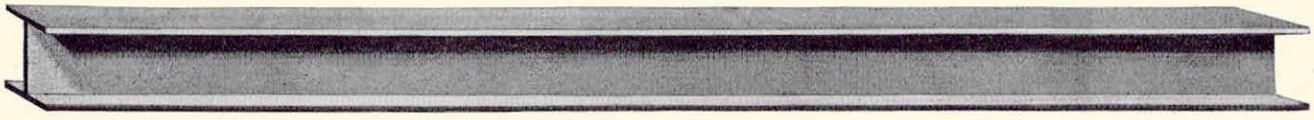
C. B. SECTIONS



Railway Officers

EXECUTIVE

J. J. Weiss, assistant treasurer of the Kansas City Southern, with headquarters at New York, has been appointed vice-president and assistant secretary, succeeding **G. C. Hand.**

W. L. Haehnlen, vice-president of the Tonopah & Goldfield and president of the Tonopah Mining Company, of Nevada, with headquarters at Philadelphia, Pa., has been elected president of that road.

E. H. Banker, executive assistant to the vice-president of the Cleveland, Cincinnati, Chicago & St. Louis, has been appointed special assistant to the vice-president and general manager, with headquarters as before at Cincinnati, Ohio. **Charles A. Burke,** chief clerk to the general manager at Cincinnati, has been promoted to executive assistant to the vice-president and general manager, succeeding Mr. Banker.

John L. Beven, vice-president of the Illinois Central, was elected senior vice-president on January 1, with headquarters as before at Chicago. The position of senior vice-president on that railroad has been vacant since the election of **A. E. Clift,** former senior vice-president, as president of the Central of Georgia early in 1929. **Robert V. Fletcher,** general counsel, with headquarters at Chicago, has also been elected vice-president.

J. F. Deasy, assistant vice-president, operation, of the Pennsylvania, has been promoted to vice-president of the Central region, with headquarters at Pittsburgh, Pa., succeeding **E. W. Smith,** resigned to become co-receiver of the Seaboard Air Line. **F. W. Hankins,** chief of motive power, has been promoted to assistant vice-president, operation, and will also continue as chief of motive power. **Walter S. Franklin,** president of the Detroit, Toledo & Ironton at Detroit, Mich., will undertake the newly created position of assistant to vice-president, operation, with headquarters at Philadelphia, Pa. **S. T. Stackpole,** traffic manager at Chicago, has been appointed assistant vice-president at Detroit, succeeding **W. M. Wardrop** appointed assistant to vice-president at Chicago.

FINANCIAL, LEGAL AND ACCOUNTING

W. R. Patterson, auditor of disbursements of the Canadian Pacific, has been appointed deputy general auditor. **Charles B. Gordon,** comptroller of the Kettle Valley at Penticton, B. C., will succeed Mr. Patterson as auditor of disbursements at Montreal.

John Webster Marshall, assistant secretary and assistant treasurer of the Pennsylvania, who has been in charge of the stock transfer office in New York City since its establishment 30 years ago, will retire from active service under the railroad's pension rules. He completed 46 years of service with the Pennsylvania last June.

W. C. Smith, general tax agent of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been appointed assistant tax commissioner of the Northern Pacific, with headquarters at Seattle, Wash. **Harold J. Turner,** agent on the Spokane, Portland & Seattle at Goldendale, Wash., has been appointed general tax agent of that road, succeeding Mr. Smith.

Owen W. Dynes, general solicitor of the Chicago, Milwaukee, St. Paul & Pacific, has been elected general counsel, succeeding **Herman H. Field,** who, at his own request, will retire as general counsel on January 1, but will retain a connection with the Milwaukee as special counsel. **Carl S. Jefferson,** general attorney, has been elected general solicitor, succeeding Mr. Dynes. Each will have headquarters as before at Chicago.

Owen W. Dynes

Mr, Dynes has been connected with the Milwaukee for 22 years. He was born at Columbus, Wis., on May 31, 1869, and attended Oshkosh (Wis.) Normal school and studied law at Cornell University. He was admitted to the bar in 1895 and shortly thereafter aided in the first revision of the Starr & Curtis revised statutes of Illinois. From 1897 to 1908, Mr. Dynes served as trial attorney for the Fidelity & Casualty Co. at Chicago, and as an attorney engaged in the general practice of corporation law. He entered the service of the Milwaukee in 1908 as assistant general solicitor at Chicago. Four years later he was appointed commerce counsel, then being advanced to general attorney in 1918. He had been general solicitor since October, 1922.

Mr. Field retires as general counsel of the Milwaukee after more than 50 years of service with that road. He was born at Leverett, Mass., on May 17, 1857, and graduated from Wilbraham academy, Wilbraham, Mass., in 1873. In 1879 he was admitted to the bar in Wisconsin and he was admitted to practice before the Supreme Court of the United States in 1893. Mr. Field entered railway service in 1880 as an attorney for the Milwaukee at Milwaukee, Wis. Six years later he was advanced to assistant general solicitor at Chicago, where he remained until 1905 when he was appointed general counsel of the Chicago, Milwaukee & Puget Sound (now part of the Milwaukee) at Seattle, Wash. He returned to the general offices of the Milwaukee at Chicago in 1912 as general solicitor, being elected general counsel in charge of the legal department of that road in October, 1922.

Herman H. Field

Mr. Jefferson, who becomes general solicitor, has been in the service of the Milwaukee for about 30 years. He was born at Madison, Wis., on August 31, 1876, and graduated from the law school of the University of Wisconsin in 1896.

Carl S. Jefferson

Two years later he became a law clerk in the offices of the Milwaukee at Chicago, being advanced to attorney in 1900. In 1910 he was promoted to assistant general solicitor. During the World war Mr. Jefferson served as a judge advocate in the United States army, then re-entering the Milwaukee's service as

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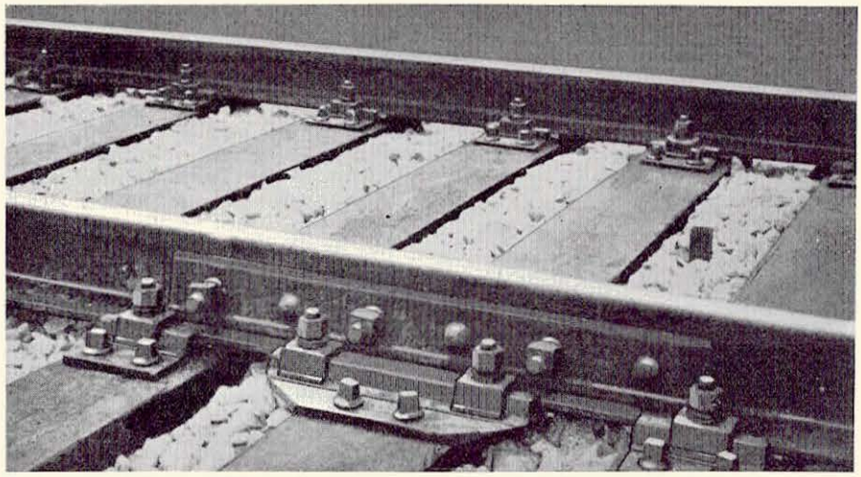
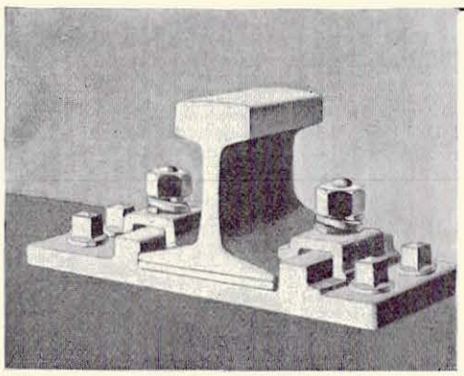
A test section of GEO track will convince you of its

OUTSTANDING SUPERIORITY





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GEO TRACK CONSTRUCTION

CARNEGIE STEEL COMPANY - PITTSBURGH

Subsidiary of United States Steel Corporation

109

assistant general solicitor. He was promoted to general attorney in 1922, a position he held continuously until his election to general solicitor.

OPERATING

Dr. Angus E. MacMillan has been appointed chief surgeon of the Twin City Railroad, with headquarters at Chehalis, Wash.

Albert L. Smith, superintendent of the Tremont & Gulf, has been promoted to general manager, with headquarters as before at Winfield, La., and the position formerly occupied by Mr. Smith has been abolished.

B. S. Baumann has been appointed trainmaster on the Shasta division of the Southern Pacific, with headquarters at Dunsmuir, Cal., succeeding **G. H. Kilborn,** who has been transferred to the Salt Lake division, with headquarters at Susanville, Cal.

A. C. McDonald has been appointed assistant superintendent of the McCook division of the Chicago, Burlington & Quincy, with headquarters at Denver, Colo., succeeding **A. G. Smart,** who retired on January 1 after 45 years of service with the Burlington.

J. D. Walker, superintendent of the Southern division of the Colorado & Southern, with headquarters at Trinidad, Colo., has been promoted to assistant general manager, with headquarters at Denver, Colo. **A. J. Horton, assistant** to the general manager of the Lines of the Chicago, Burlington & Quincy west of the Missouri river at Omaha, Neb., has been appointed superintendent of the Southern division of the Colorado & Southern, succeeding Mr. Walker. **Paul Wilson,** chief dispatcher on the Colorado & Southern at Denver, has been appointed assistant to the general manager at Omaha, replacing Mr. Horton.

L. U. Morris, superintendent of the Los Angeles division of the Southern Pacific, with headquarters at Los Angles, Cal., has been promoted to assistant general manager of the Northern district, with headquarters at Sacramento, Cal., succeeding **Thomas Ahern,** who retired from active service on January 1. **J. J. Jordan,** assistant superintendent of the Coast division at San Francisco, Cal., has been promoted to superintendent of that division with headquarters at the same point, succeeding **E. R. Anthony,** who retired from active duty on January 1. **J. D. Brennan,** assistant superintendent of the Western division, with headquarters at Oakland Pier, Cal., has been promoted to superintendent of the San Joaquin division, with headquarters at Bakersfield, Cal., succeeding **C. M. Murphy,** who has been transferred to the Salt Lake division, with headquarters at Ogden, Utah. Mr. Murphy replaces **C. F. Donnatin,** who has been transferred to the Los Angeles division to succeed Mr. Morris. **A. A. Lowe,** general transportation inspector of the Pacific lines, has been appointed assistant superintendent of the Coast division, with headquarters as before at San Francisco.

MECHANICAL

The position of master mechanic of the Wymore division of the Chicago, Burlington & Quincy at Wymore, Neb., was abolished on January 1 and the jurisdiction of **J. Dietrich,** master mechanic of the Lincoln division at Lincoln, Neb., has been extended to include the Wymore division. **G. E. Johnson,** who was master mechanic of the Wymore division, has been transferred to the Omaha division at Omaha, Neb., succeeding **J. S. Ford,** who has been transferred to the Centerville division at Centerville, Iowa. Mr. Ford succeeds **C. E. Plott,** who has been appointed assistant master mechanic of the Galesburg and East Ottumwa division at Galesburg, Ill.

TRAFFIC

B. F. Deitzer has been appointed general agent for the Peoria & Pekin Union at Indianapolis, Ind., succeeding **P. A. True,** deceased.

W. T. Tannehill, assistant general freight agent on the New York Central at Chicago, has been promoted to general freight agent at that point, succeeding **William J. Keller,** who retired from active duty on January 1.

Col. P. A. Frye, assistant general freight agent of the Mississippi Central, with headquarters at Shreveport, La., has been appointed traffic manager of the Louisiana Highway Commission, with headquarters at Baton Rouge, La. Col. Frye, who has been connected with the Mississippi Central for about 10 years, was appointed general agent of that road at Shreveport in May, 1924, and was promoted to assistant general freight agent at the same point in 1928.

C. J. Collins, general passenger agent of the Union Pacific System, has been promoted to assistant passenger traffic manager, with headquarters as before at Omaha, Neb. **John P. Cummins,** assistant to the passenger traffic manager at Omaha, has been promoted to general passenger agent, succeeding Mr. Collins. **L. E. Omer,** assistant general passenger agent at Omaha, has been promoted to assistant to the passenger traffic manager, replacing Mr. Cummins.

Sidney King, general agent of the freight department of the Wabash at Houston, Tex., has been promoted to assistant freight traffic manager, in charge of fruit and vegetable traffic, as well as agencies assigned, with headquarters at St. Louis, Mo. **P. L. Johnson,** traveling freight agent at Houston, has been promoted to general agent of the freight department at that point to succeed Mr. King. **A. B. Green,** traveling freight agent at Memphis, Tenn., has been promoted to general agent of the freight department at San Antonio, Tex.

J. P. Roddy, general agent on the Northern Pacific at Spokane, Wash., has been promoted to assistant general freight and passenger agent at Duluth, Minn., succeeding **J. I. Thomas,** who retired under the pension rules of the company on January 1, after more than 47 years of service. **T. A. Murphy,** general agent at San Francisco, Cal., has been transferred to Spokane to succeed Mr. Roddy. **R. J. Tozer,** assistant general passenger agent at Seattle, Wash., has been appointed general agent at San Francisco to replace Mr. Murphy. **C. L. Townsend,** assistant general passenger agent at St. Paul, Minn., has been transferred to Seattle, succeeding Mr. Tozer. **M. E. Harlan,** general agent in the passenger department at Chicago, has been appointed assistant general passenger agent at St. Paul to replace Mr. Townsend. **G. W. Rodine,** assistant general agent at Chicago, has been appointed general agent at the same point, succeeding Mr. Harlan.

Clifton Charles Gray, assistant general freight agent of the Western Maryland, has been promoted to general freight agent, with headquarters at Pittsburgh, Pa. He was born on March 13, 1892, in Knox County, Ill., and received his education in the public schools at Baltimore, Md., and also at Strayer's Business College, Baltimore. In 1909, he entered railroad service as clerk in the executive offices of the United Railways & Electric Company at Baltimore, and when the Erie opened their Baltimore

Clifton Charles Gray

office in 1911, he became connected with that road. At the time he was furloughed for military service in 1917, he was serving as traveling freight agent of the Erie. Mr. Gray returned to railroad service with the Western Maryland in February, 1920, as traveling freight agent, covering southern territory out of Baltimore. On March 1, 1921, he was transferred to Minneapolis, Minn., as commercial freight agent, and on October 15, 1923, he was transferred to Hagerstown, Md., as division freight agent. On February 1, 1927, he was appointed assistant general freight agent at Pittsburgh, Pa., which duties he relinquished on December 1, 1930, to become general freight agent.

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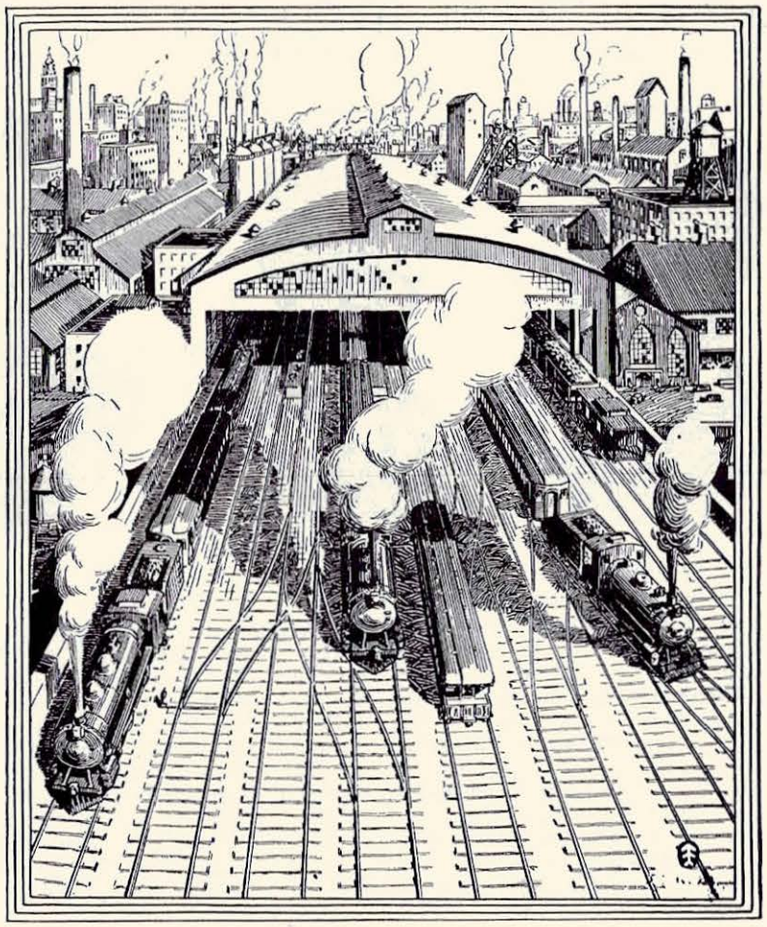

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New Appointments in New Haven Traffic Department

Effective December 10 the following appointments were made in the traffic department of the New York, New Haven & Hartford: **J. E. McGrath,** assistant freight traffic manager, lines east, to be assistant to general traffic manager of the New Haven and the New England Steamship Company, with headquarters at Boston, Mass.; **H. A. Poveleite,** assistant general freight agent and commerce assistant, to be assistant to general traffic manager in charge of commerce work, with headquarters at New Haven, Conn.; **John Douglas,** assistant to vice-president, to be assistant freight traffic manager, in charge of solicitation, with headquarters at New Haven and to take over industrial development work upon the resignation of **E. L. Taylor,** effective January 1, Mr. Taylor having left to engage in commercial work; **J. A. Beahan,** assistant general freight agent, to be general freight agent at Boston; **H. L. Sheffield,** assistant general freight agent, to be assistant freight traffic manager, in charge of rates and divisions, at New Haven; **J. E. Redman,** assistant general freight agent, to be general freight agent at New York; **A. A. Chilson,** district freight and passenger agent, to be general agent at Springfield, Mass., and **G. J. Browne,** general agent at Portland, Me., transferred to Worcester, Mass., in the same capacity.

H. A. Poveleite

J. E. McGrath

H. L. Sheffield

J. E. Redman

Mr. McGrath was born on February 1, 1875, at Framingham, Mass., and received his education at Framingham Academy and Comers Commercial College, Boston. He began his railroad career in April, 1895, with the Old Colony (now part of the New Haven) as a stenographer in the general freight department. Following the leasing of the Old Colony by the New York, New Haven & Hartford, Mr. McGrath was appointed traveling freight agent in September, 1902. He was promoted in 1906 to the position of commercial agent of the New Haven at Boston, having charge of solicitation and the direction of the various traveling freight agents. On March 1, 1920, he became assistant general freight agent at Boston. During the period of federal control he was in government service, acting from January 28, 1918, until September 1, 1919, as assistant chief, Inland Traffic Service, with jurisdiction over the War Department in the movement and routing of government property within the territory assigned to him, covering in this work the New England States and Eastern Canada. In 1927 he was appointed assistant freight traffic manager, lines east, which position is now abolished.

Mr. Poveleite began his railroad career as a stenographer in the general freight department of the Queen & Crescent at Cincinnati, Ohio. He advanced steadily and in 1917 was appointed assistant freight traffic manager of the Southern, which system had previously absorbed the Queen & Crescent. In 1918, Mr. Poveleite resigned from the Southern and went into private business. In 1921, he joined the United States Railroad Administration, occupying the position of chief traffic assistant. In 1925 he left the United States Railroad Administration to become special assistant to the traffic vice-president of the Boston & Maine. On April 1, 1928, Mr. Poveleite came to the New Haven as assistant general freight agent and commerce assistant, with headquarters at New Haven, the position he held until his recent advancement.

Mr. Beahan was born at Newburgh, N. Y., on September 29, 1871. After attending public school and Free Academy in that city he started his railroad career in 1890, as a student of telegraphy with the Erie. He then became freight clerk, continuing with the Erie until June 9, 1892, when he entered the service of the New York & New England (now part of the New Haven). He worked in various clerical positions until 1904, serving as chief clerk and general foreman at Fishkill Landing (now Beacon, N. Y.); as billing clerk at Boston; chief clerk and accountant at Holyoke, Mass., and freight agent as Fishkill Landing. He then went to the freight department at New Haven, first as chief tariff clerk and later as chief clerk. From 1908 to 1919, he served as general agent of the freight department at New Haven and Worcester, then going to Boston as freight claim agent until 1922, when he was made assistant general freight agent, with headquarters first at New Haven and later at Boston.

Mr. Sheffield was born at New Haven, April 30, 1887, and, after attending grammar and high schools, entered the service of the New Haven in March, 1906, as messenger in the general freight office. In 1910 he was transferred to Boston with the Tariff Bureau and from 1918 to 1919 was assistant to the director of traffic of the U. S. R. A. at Washington. He returned to the New Haven on March 1, 1920, as chief of the tariff bureau, holding that position until July 1, 1924, when he was made assistant general freight agent, the position he held up to his present appointment as assistant freight traffic manager.

Mr. Redman was born in New York City December 13, 1873, and attended Normal Training School, public schools and the College of the City of New York. On July 12, 1888, he entered the service of the Providence & Stonington Steamship Company as an office boy, subsequently serving in various clerical capacities, and for two years was freight clerk on the steamers. In 1897, he was appointed cashier at Pier 36, North River. In May, 1898, he served in Cuba as a sergeant in Company G, 71st New York Infantry, returning to his position as cashier in January, 1899. In 1902 he was promoted to chief clerk, and in December, 1907, was appointed freight agent of the New London and New Bedford Lines at Pier 40, North River, holding that position until 1917, when he was appointed agent at Pier 14, North River, having jurisdiction over the Fall River and Providence Lines, as well as control of the New York lighterage department. On January 1, 1920, Mr. Redman was appointed assistant general freight agent of the New Haven and general freight agent of the New England Steamship Company, which duties he now relinquishes.

A photograph of Mr. Douglas, together with a biographical sketch of his railway career appeared in *Railway Age* of February 8, 1930, page 413.

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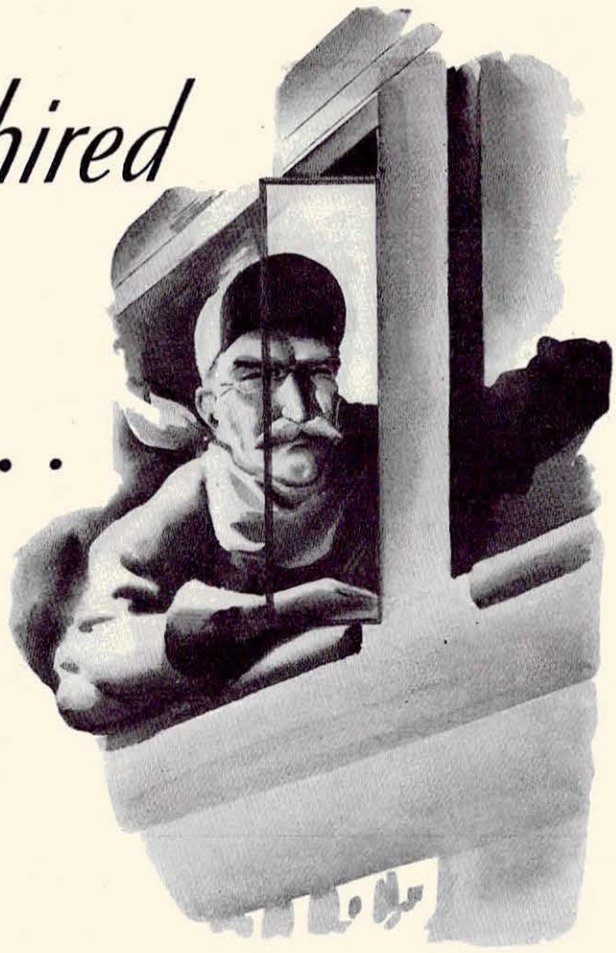
Engineers are hired to maintain

SCHEDULES . .

NOT *to nurse*

BOILER TUBES



Schedules assume that engines and rolling stock in general will perform as intended; and unless that condition is fulfilled, schedules may go by the board.

An engineer is kept busy enough when things are normal. Every hour spent nursing a half-sick or limping engine is a hard hour for him, even if it does not result in actual delays and schedule derangement.

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Effective January 1, **William S. H. Hamilton**, railway engineer of the General Electric Company at New York, will assume the position of assistant electrical engineer of the New York Central, with headquarters at New York.

Ralph W. E. Bowler, division engineer of the Pittsburgh division of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been promoted to engineer maintenance of way of the Northern division, with headquarters at Buffalo, N. Y., succeeding **C. L. Barnaby,** who died on December 4. **Collis W. Van Nort,** division engineer of the Ashtabula and Erie division, has been appointed division engineer of the Pittsburgh division, to succeed Mr. Bowler.

Mr. Bowler was born at Washington, D. C., on January 16, 1883, and received his higher education at the University of Delaware, from which he was graduated in 1905. He obtained his first railway experience during the summers of 1902 and 1903, while in college, acting as a rodman on the Maryland division of the Pennsylvania. Immediately following his graduation from college, in June, 1905, he entered the service of the Pennsylvania as a rodman, with headquarters at Wilmington, Del. On November 1, 1908, he was promoted to transitman, and on November 16, 1909, he was made assistant supervisor of track at Media, Pa. Following several transfers in the same capacity, which

R. W. E. Bowler

took him to Columbia and Harrisburg, Pa., Mr. Bowler was promoted to supervisor on January 1, 1916, with headquarters at South Fork, Pa. Later he was transferred to Parkton, Md., and then to Washington, D. C., and on May 1, 1923, he was promoted to division engineer of the Mackinaw division, with headquarters at Grand Rapids, Mich. On August 1 of the same year, he was transferred as division engineer to the Toledo division, with headquarters at Toledo, Ohio, and on January 16, 1927, he was appointed division engineer of the Pittsburgh division, with headquarters at Pittsburgh, Pa. Mr. Bowler's promotion to engineer maintenance of way of the Northern division became effective on December 15.

SPECIAL

George Hodge, assistant general manager of the eastern lines of the Canadian Pacific, has been appointed manager of the newly-created department of personnel. Mr. Hodge was born in Montreal, Que., on October 2, 1874. He entered the service of the C. P. R. in March, 1890, as a clerk in the general passenger agent's office at Montreal. In August of the same year he was transferred to the office of the assistant to the president, and in May, 1891, to the vice-president's office. In February, 1897, he was promoted to chief clerk, and in May, 1899, held the same position under the assistant general manager. He was transferred to the second vice-

George Hodge

president's office in August, 1900, and returned to the vice-president in January, 1906. In March, 1907, he was made superintendent of terminals at Montreal, and in January, 1908, became superintendent of the Laurentian division with headquarters at Montreal. In March, 1911, he went to London, Ont., as division superintendent, returning to Montreal in February, 1912, as general superintendent of the Quebec district. He was promoted to the position of assistant to the general manager of the eastern lines in June, 1915, and became assistant to the vice-president, eastern lines, in October, 1918. In 1922, he was appointed assistant general manager, eastern lines, which duties he relinquishes to take up his new appointment.

OBITUARY

Charles Rogers Craig, formerly general purchasing agent of the Southern, died at his home at Washington, D. C., on January 5, at the age of 58 years.

George E. Evans, executive vice-president of the Louisville & Nashville, with headquarters at Louisville, Ky., since 1926, died in that city on January 7th, after a brief illness from pneumonia. Mr. Evans was 74 years of age.

H. W. Howell, general agent for the Chicago, Milwaukee, St. Paul & Pacific at Salt Lake City, Utah, died at Burns, Ore., on December 11, at the age of 58 years.

George T. Goddard, electrical engineer-equipment, of the Illinois Central, with headquarters at Chicago, died at the Illinois Central hospital in that city on January 2 following injuries received when he was struck by an electric suburban train while inspecting equipment on the same day.

William Cotter, former president and general manager of the St. Louis & O'Fallon, the Manufacturers and the Pere Marquette, died at his home at Pasadena, Cal., on December 25, after an illness of two years. Mr. Cotter had been in railway service for 54 years at the time of his retirement two years ago. He was born at Bloomington, Ill., in 1858, and entered railway service as a telegrapher on the Chicago & Alton when 16 years of age. From 1878 to 1901, he served successively in various capacities in the operating departments of the St. Louis, Iron Mountain & Southern (now part of the Missouri Pacific), the Chicago, Milwaukee & St. Paul, the Wabash and the Grand Trunk, including those of superintendent of the Eastern and the Western divisions of the latter road at Montreal, Que., and Detroit, Mich., respectively. Mr. Cotter was then appointed general superintendent of the Iron Mountain at St. Louis, followed in 1902 by appointment as manager of the Missouri Pacific system; in 1904 as general manager of the Pere Marquette at Detroit, and, in 1907 as president of the Pere Marquette

William Cotter

and president and general manager of the Cincinnati, Hamilton & Dayton (now part of the Baltimore & Ohio). In 1912, he left railway service to become manager of an estate at New York, returning in 1916 as president and general manager of the St. Louis & O'Fallon and the Manufacturers at St. Louis. From 1914 to 1926 he also served as receiver of the Chicago, Peoria & St. Louis (now the Chicago, Springfield & St. Louis and the Jacksonville & Havana). On April 3, 1928, Mr. Cotter retired from active service with the title of president, retired. Since that time he had made his home at Pasadena.

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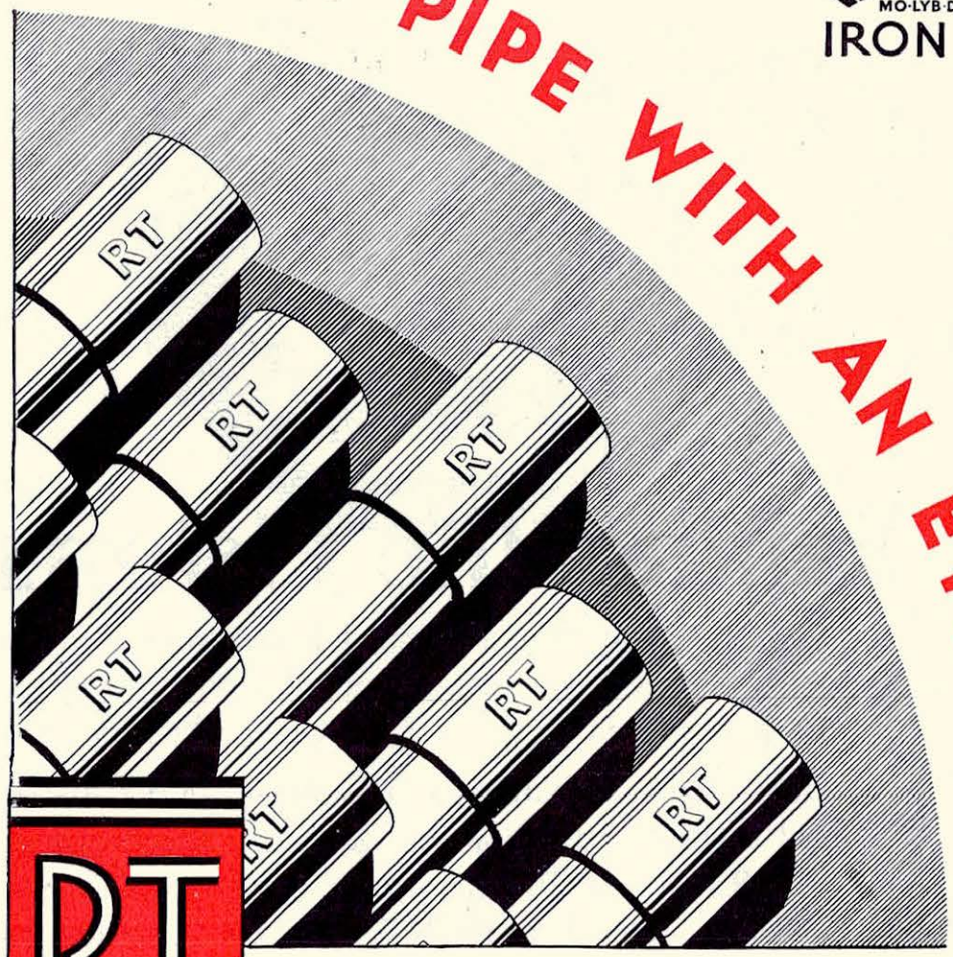

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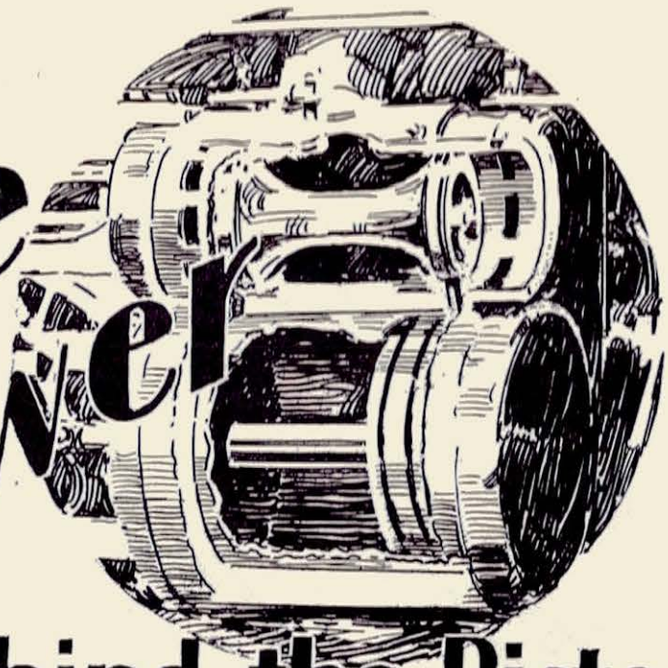

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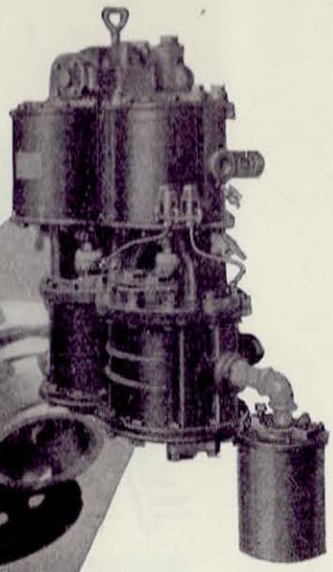

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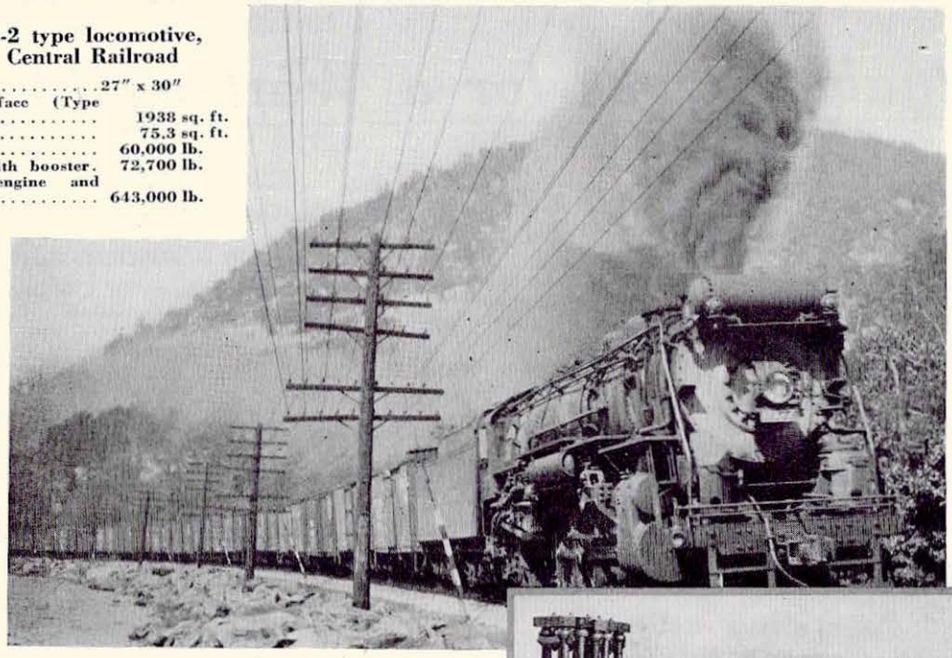

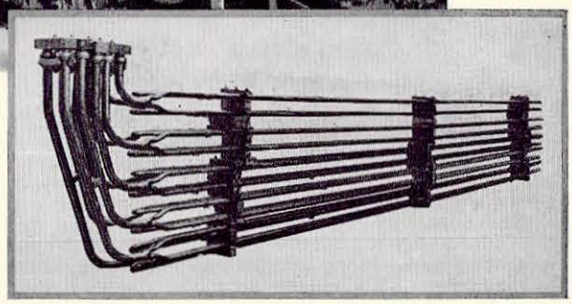

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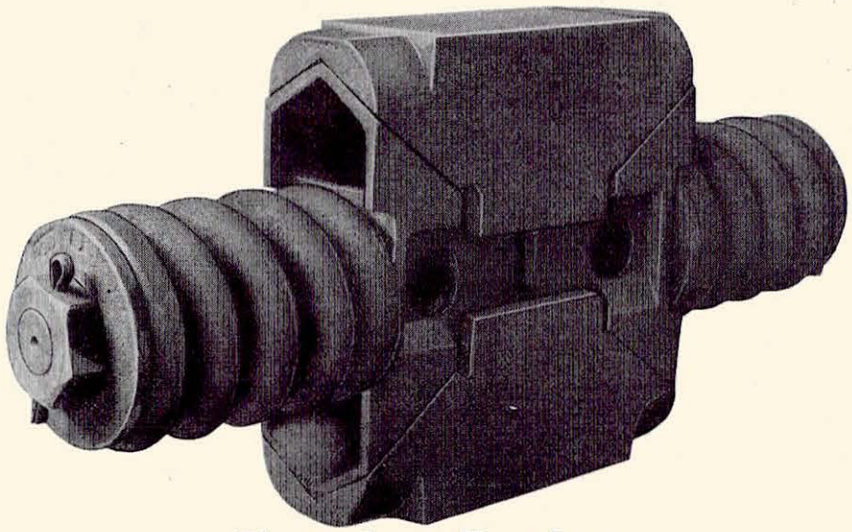

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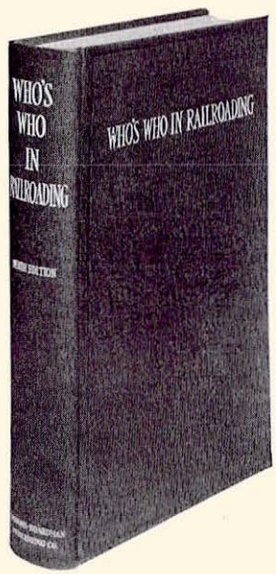

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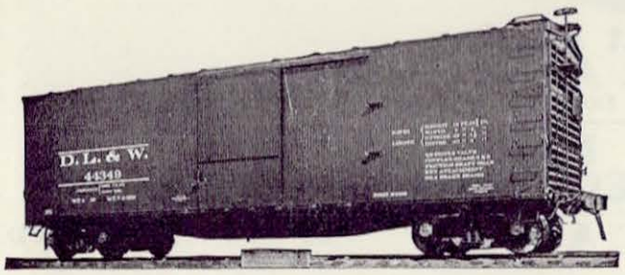

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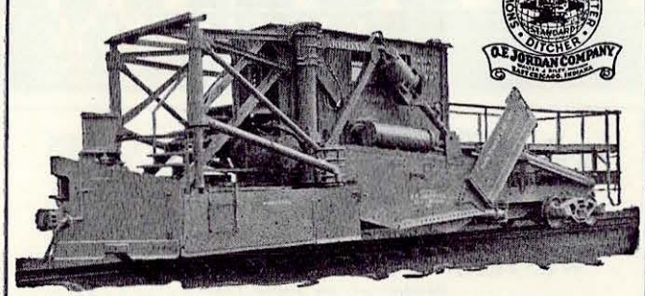

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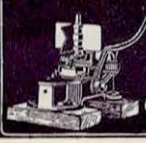

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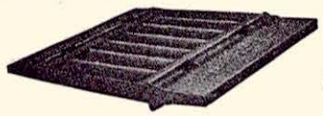

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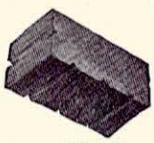

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National Malleable & Steel Castings Co.

Connections, Truck.
National Malleable & Steel Castings Co.

Connections, Truck Lever.
Schaefer Equipment Co.

Contraction Joint.
General Railway Signal Co.

Control Devices, Train Speed.
Union Switch & Signal Co.

Control, Locomotive.
Valve Pilot Co.

Controllers, Electric.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Conveying Machinery.
American Bridge Co.
Clark Tructractor Co.
Industrial Brownhoist Corp.
Milwaukee Electric Crane & Hoist Corp.
Orton Crane & Shovel Co.

Corrugated Sheet.
Aluminum Co. of America.

Conveyor, Ash — (See Coal Ore and Ash Handling Mach.)

Coupler Pockets—(See Draft Yokes.)

Coupler Yokes.
Bettendorf Co., The.
Gould Coupler Co.
Symington Co., The.

Couplers.
American Steel Foundries.
Buckeye Steel Castings Co.
Franklin Railway Supply Co., Inc.
Gould Coupler Co., The.
McConway & Torley Co.
National Malleable & Steel Castings Co.
Standard Coupler Co.
Westinghouse Air Brake Co.

Couplings, Hose.
Fort Pitt Malleable Iron Co.
Ingersoll-Rand Co.
Vapor Car Heating Co., Inc.
Westinghouse Air Brake Co

Cranes, Ballast Cleaning.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Ohio Locomotive Crane Co.

Cranes, Barge.
Industrial Brownhoist Corp.
Ohio Locomotive Crane Co.

Cranes, Bracket.
Whiting Corporation.

Cranes, Crawler.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Orton Crane & Shovel Co.

Cranes, Crawling Shovels and Draglines.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Orton, Crane & Shovel Co.

Cranes, Diesel.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Ohio Locomotive Crane Co.

Cranes, Electric Traveling.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Milwaukee Electric Crane & Hoist Corp.
Whiting Corporation.

Cranes, Gantry.
Industrial Brownhoist Corp.
Milwaukee Electric Crane & Hoist Corp.
Ohio Locomotive Crane Co.
Orton Crane & Shovel Co.
Whiting Corporation

Cranes, Gasoline.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Ohio Locomotive Crane Co.
Orton Crane & Shovel Co.

Cranes, Grab Bucket.
American Hoist & Derrick Co.
Milwaukee Electric Crane & Hoist Corp.

Cranes, Handpower.
American Hoist & Derrick Co.
Whiting Corporation.

Cranes, Jib.
Industrial Brownhoist Corp.
Milwaukee Electric Crane & Hoist Corp.
Whiting Corporation.
Worthington Pump & Machinery Corp.

Cranes, Locomotive.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Ohio Locomotive Crane Co.
Orton Crane & Shovel Co.

Cranes, Magnet.
Whiting Corporation.

Cranes, Overhead.
Milwaukee Electric Crane & Hoist Corp.

Cranes, Pillar.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Milwaukee Electric Crane & Hoist Corp.
Whiting Corporation.

Cranes, Portable.
American Hoist & Derrick Co.
Clark Tructractor Co.
Orton Crane & Shovel Co.

Cranes, Tractor.
Orton Crane & Shovel Co.

Cranes, Transfer.
Industrial Brownhoist Corp.
Milwaukee Electric Crane & Hoist Corp.
Whiting Corporation.

Cranes, Traveling.
Milwaukee Electric Crane & Hoist Corp.

Cranes, Wharf.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Ohio Locomotive Crane Co.

Cranes, Wrecking.
Industrial Brownhoist Corp.
Orton Crane & Shovel Co.

Crank Pins — (See Pins, Cranks).

Creosote.
American Creosoting Co.
Century Wood Preserving Co.
International Creosoting & Constr. Co.
Jennison Wright Co.

Cribbing Units.
Federal American Cement Tile Co.

Cross Arms.
American Bridge Co.
General Electric Supply Corp.
Graybar Electric Co.
International Creosoting & Construction Co.

Cross-Over Bridges, Freight House.
Whiting Corporation.

Cross Ties.
Century Wood Preserving Co.
International Creosoting & Construction Co.

Cross Ties, Creosoted.
American Creosoting Co.
Century Wood Preserving Co.
International Creosoting & Construction Co.
National Lumber & Creosoting Co.

Cross Ties, Steel.
Bethlehem Steel Co.

Crossheads & Shoes.
Baldwin Locomotive Wks.
Barco Mfg. Co.
International Creosoting & Construction Co.

Crossing Signals & Signs.
Railroad Supply Co.

Crossings — (See Frogs and Crossings).

Crossings, Pavement.
Carey Co., The Philip

Crushers, Coal.
American Sheet & Tin Plate Co.
Orton Crane & Shovel Co.

Culverts.
American Rolling Mill Co. The.
Armco Culvert Mfrs Assoc.
Republic Steel Corp.
Toncan Culvert Manufacturers' Association.

Culverts Corrugated.
Armco Culvert Manufacturers' Association.
Republic Steel Corp.

Culverts, Paved Invert.
Armco Culvert Mfrs Assoc.

Cupolas, Foundry.
Whiting Corporation.
Hammett, H. G.

Cups, Oil.
Prime Manufacturing Co., The.
Westinghouse Air Brake Co.

Curtains & Fixtures, Car Window.
National Lock Washer Co
Pantasote Co., Inc., The

Curtain Material, Car.
Ryerson & Son, Jos. T.

Cutting & Welding Apparatus.
Oxweld Railroad Service Co.
Westinghouse Elec. & Mfg. Co.

Cut-Off Indicators & Recorders.
National Tube Co.
Valve Pilot Co.

Cylinders, Air Brake.
Westinghouse Air Brake Co.

Cylinders, Cast Steel Locomotive.
Union Steel Casting Co.

Cylinders, Oxy-Acetylene.
Oxweld Railroad Co., The

Deoxidizers.
Q & C Co., The.
Vanadium Corp. of America.

Derricks.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.

Diesel Electric Power Plants
Fairbanks-Morse & Co.
Westinghouse Elec. & Mfg. Co.

Dirt Collectors.
Westinghouse Air Brake Co.

Disinfectants.
West Disinfecting Co.

Dispatching Systems.
General Railway Signal Co.
Union Switch & Signal Co.

Ditchers.
American Hoist & Derrick Co.
Jordan Co., O. F.

Ditching Machinery.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Orton Crane & Shovel Co.

Door Fixtures—(See Fixtures Car Door).

Doors, Car.
Camel Sales Co.
Chicago Railway Equipment Co.
Miner, W. H.
Wine Railway Appliance Co.

Doors, Folding, Rolling and Sliding.
Kinnear Manufacturing Co.

Doors, Locomotive Firebox.
Franklin Railway Supply Co., Inc.

Doors, Steel.
Kinnear Manufacturing Co.

Doors, Rolling, Steel.
Kinnear Mfg. Co.
Mahon Co., R. C.

Doors, Wood.
Kinnear Mfg. Co.

Draft Arms.
American Steel Foundries.
Birdsboro Steel Foundry & Mach. Co.
Bradford Corporation.
Symington Co., The.
Universal Draft Gear Attachment Co.

Draft Gear Attachments.
Symington Co., The.

Draft Gears.
American Steel Foundries
Bradford Corporation.
Cardwell-Westinghouse Co.
Edgewater Steel Co.
Fort Pitt Malleable Iron Co.
Keyoke Railway Equipment Co.
Miner, W. H.
National Malleable & Steel Castings Co.
Standard Coupler Co.
Union Draft Gear Co.
Universal Draft Gear Attachment Co.

Draft, Yokes
American Steel Foundries
Bettendorf Co., The.
Buckeye Steel Castings Co.
Gould Coupler Co., The
Keyoke Railway Equipment Co.
McConway & Torley Co.
Miner, W. H.
Mt. Vernon Car Mfg. Co.
National Malleable & Steel Castings Co.
Pressed Steel Car Co.
Steel Car Forge Co.
Symington Co., The
Universal Draft Gear Attachment Corp.

Draglines.
Orton Crane & Shovel Co.

Drainage Gates.
Armco Culvert Mfrs. Assoc.
Republic Steel Corp.

Drains, Perforated Iron.
Armco Culvert Mfrs. Assoc.
Republic Steel Corp.

Drawbar Centering Device.
Gould Coupler Co., The
Miner, W. H.

Drawbars, Unit Safety.
Franklin Railway Supply Co., Inc.
Industrial Brownhoist Corp.

Dredging Machinery.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.

Drilling Machines.
Sellers & Co., Inc., Wm.

Drilling Machines, Bonding.
Railroad Supply Co.

Drilling Machines, Pneumatic.
Ingersoll-Rand Co.

Drilling Machines, Rock.
General Electric Co.
Ingersoll-Rand Co.
Worthington Pump & Machinery Corp.

Drilling Machines, Upright and Radial.
Ryerson & Son, Joseph T.
Sellers & Co., Inc., Wm.

Drills.
Ingersoll-Rand Co.

Drills, Close Corner.
Ingersoll-Rand Co.

Drills, Concrete.
Ingersoll-Rand Co.

Drills, Steel Rock and Steel Sharpened.
Ingersoll-Rand Co.
Worthington Pump & Machinery Corp.

Drills, Track & Bending.
Bird-Archer Co., The.
Ingersoll-Rand Co.

Drinking Cups.
U. S. Envelope Co.

Drive Gas Electric Coaches.
General Electric Co.

Drive Gas Electric Locomotives
Westinghouse Elec. & Mfg. Co.

Driving Boxes (Extended Main).
Franklin Railway Supply Co., Inc.

Drop Door Mechanism.
Wine Railway Appliance Co.

Drop Trucks, Transformer.
Whiting Corporation.

Drop Tables, Electric.
Whiting Corporation.

Drop Testing Machinery.
Whiting Corporation.

Drying Ovens.
Mahon Co., R. C.

Dynamos — (See Generators Electric).

Electrical Cable Accessories.
General Cable Corp.
General Electric Supply Corp.

Electric Cables.
General Cable Corp.
General Electric Supply Corp.

Electrical Instruments.
Electric Service Supplies Co.
Railroad Supply Co.
Westinghouse Elec. & Mfg. Co.

Electrical Supplies.
General Electric Co.
General Electric Supply Corp.
Graybar Electric Co.
Westinghouse Elec. & Mfg. Co.

Electrification. Railroad.
Battey & Kipp.
General Electric Co.
United Engineers & Constructors, Inc.
Westinghouse Elec. & Mfg. Co.

Electric Heaters.
General Electric Supply Corp.

Electrical Insulation.
General Cable Corp.
General Electric Supply Corp.

Electrical Porcelain Insulators.
General Electric Supply Corp.

Electric Motors.
General Electric Supply Corp.

Electric Rivet Heaters.
General Electric Supply Corp.

Electric Switches.
General Electric Supply Corp.

Enamels.
Sherwin-Williams Co.

Ends, Steel.
Hutchins Car Rfg. Co.
Union Metal Products Co.

Engineers, Consulting, Civil. Elec., Hydraulic, Mechanical.
Battey & Kipp.
Hunt Co., Robt. W.
Muhlfeld, John E.
United Engineers & Constructors, Inc.

Engineers, Contracting.
Battey & Kipp.
United Engineers & Constructors, Inc.

Engineers and Contractors.
Battey & Kipp.
Hunt Co., Robert W.
Muhlfeld, John E.
United Engineers & Constructors, Inc.

Engineers, Construction.
Battey & Kipp.
Roberts & Schaefer Co.
United Engineers & Constructors, Inc.

Engineers and Contractors. Elec. Hydraulic, Mech.
Battey & Kipp.
Hunt Co., Robert W.
Muhlfeld, John E.
Roberts & Schaefer Co.

Engineers, Inspecting.
Gulick-Henderson Co.
Hunt Co., Robert W.
Muhlfeld, John E.
Pittsburgh Testing Laboratory.
United Engineers & Constructors, Inc.

Engineers, Valuation.
Hunt Co., Robert W.
United Engineers & Constructors, Inc.

Engines, Crude & Fuel Oil.
Fairbanks-Morse & Co.
Ingersoll-Rand Co.
Worthington Pump & Machinery Corp.

Engines, Diesel.
Worthington Pump & Machinery Corp.

Engines, Gas.
Brill Co., The J. G.
Worthington Pump & Machinery Corp.

Engines, Gas & Gasoline.
American Car & Foundry Motors Co.
Fairbanks-Morse & Co.
Ingersoll-Rand Co.
Worthington Pump & Machinery Corp.

Engines, Hoisting.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Orton Crane & Shovel Co.

Envelopes.
U. S. Envelope Co.

Excavators.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.

Exhaust.
Carey Co., The, Philip

Exhaust & Heater Pipe.
Union Asbestos & Rubber Co.

Exhaust & Ventilating Fans.
General Electric Supply Corp.

Expanders, Tube.
Ryerson & Son, Joseph T.

Explosives.
American Steel & Wire Co.

Fans, Exhaust & Ventilating.
General Electric Co.
Graybar Electric Co.
Westinghouse Elec. & Mfg. Co.

Fasteners, Car Door.
Camel Sales Co.
Fort Pitt Malleable Iron Co.
Miner, W. H.
National Malleable & Steel Castings Co.

Feed Water Heater Systems.
Bird-Archer Co., The.
Coffin, Jr., Co., The J. S
Worthington Pump & Machinery Corp.

Fence Posts.
International Creosoting & Construction Co.

Fencing Wire — (See Wire Fence).

Fence Posts, Creosoted.
National Lumber & Creosoting Co.

Ferro Alloys.
Vanadium Corp. of America.

Ferro, Chromium.
Vanadium Corp. of America.

Ferro Molybdenum.
Electro Metallurgical Sales Corp.
Vanadium Corp. of America

Ferro Silicon.
Vanadium Corp. of America.

Ferro Tungsten.
Vanadium Corp. of America.

Ferro Vanadium.
Vanadium Corp. of America.

Filters, Air.
Westinghouse Air Brake Co.
Whiting Corporation.

Filters, Dust.
Whiting Corporation.

Filters, Water & Industrial.
Graver Corp.

Filtration Plants, (Water).
Graver Corp.

Fireboxes.
American Locomotive Co.
Baldwin Locomotive Works

Fire Fighting & Protection Equipment.
Johns-Manville Corp.

Fittings, Air Brakes.
Westinghouse Air Brake Co.

Fittings, Steam.
Vapor Car Heating Co., Inc.

Fixtures, Car Door.
Camel Sales Co.
Chicago Railway Equipment Co.
Miner, W. H.
National Malleable & Steel Castings Co.

Flangers, Snow.
Q & C Co., The.

Floodlights.
General Electric Supply Corp.
Graybar Electric Co.
Oxweld Railroad Service Co.
Pyle-National Co.
Symington Co., The.
Westinghouse Elec. & Mfg Co.

Floodlights, Acetylene.
Oxweld Railroad Service Co., The.

Flooring.
Carey & Co., Philip, The.
Jennison-Wright Co.
Johns-Manville Corp.

Flooring, Car.
Tuco Products Corp.

Flooring, Coach.
Tuco Products Corp.

Flooring, Composition.
Johns-Manville Corp.
Tuco Products Corp.

Flooring, Creosoted.
Central Coal & Coke Co

Flooring, Wood.
Central Coal & Coke Co.
Century Wood Preserving Co.

Floor Plates, Steel.
Carnegie Steel Co.
Illinois Steel Co.

Floor Slabs, Concrete.
American Cement Tile Mfg. Co.

Flue Cleaners—(See Cleaners, Flue).

Flue Cutters—(See Cutters, Flue).

Flues, Boiler — (See Tubes Boiler).

Flue Shop Equipment.
Ryerson & Son, Joseph T.

Forges, Rivet Heating.
Ryerson & Son, Joseph T.

Forging Hammers.
Industrial Brownhoist Corp.

Forgings.
American Bridge Co.
American Steel Foundries.
Bethlehem Steel Company.
Brill Co., The J. G.
Carnegie Steel Co.
Edgewater Steel Co.

General Railway Signal Co.
Gould Coupler Co., The
Illinois Steel Co.
Midvale Co., The.
Mt. Vernon Car Mfg. Co.
Neely Nut & Bolt Co.
Pressed Steel Car Co.
Standard Steel Works Co.
Steel Car Forge Co.
Universal Draft Gear Attachment Co.

Forgings, Drop.
Brill Co., The J. G.
General Railway Signal Co.
Steel Car Forge Co.
Union Switch & Signal Co.

Forgings, Monel Metal.
International Nickel Co., The.

Foundry Equipment.
Whiting Corporation.

Foundry Supplies.
Bird-Archer Co., The

Frames, Locomotive.
American Steel Foundries.
American Locomotive Co.
Baldwin Locomotive Works
Birdsboro Steel Foundry & Mach. Co.
Ohio Steel Foundry Co., The.
Union Steel Casting Co.

Frames, Truck.
American Locomotive Co.
American Steel Foundries.
Baldwin Locomotive Works
Bettendorf Co., The.
Birdsboro Steel Foundry & Mach. Co.
Buckeye Steel Castings Co.
Brill Co., The J. G.
Franklin Railway Supply Co., Inc.
General Steel Castings Corp. — (Commonwealth Division).
Gould Coupler Co., The.
Ohio Steel Foundry Co., The.
Pressed Steel Car Co.
Pyle-National Co.
Symington Co., The

Frames, Vanadium.
American Locomotive Co.
Baldwin Locomotive Works
Birdsboro Steel Foundry & Mach. Co.
Union Steel Casting Co.

Frogs and Crossings.
Bethlehem Steel Company.
Continuous Rail Crossing Corp.
Ramapo Ajax Corp.

Fulcrums, Brake Beam.
American Steel Foundries.
Brill Co., The J. G.
Chicago Railway Equipment Co.
National Malleable & Steel Castings Co.

Furnaces, Electric.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Furnaces, Gasoline.
Railroad Supply Co.
Whiting Corporation.

Furnaces, Rivet Heating — (See Forges, Rivet Heating).

Furniture.
Aluminum Co. of America

Gage Testers—(See Testers Gage).

Gages, Air.
Westinghouse Air Brake Co.

Gages, Oxy-Acetylene.
Oxweld Railroad Service Co., The.

Gages, Steam.
Ashton Valve Co.

Gages, Tire.
Schrader's Son, Inc., A.

Gages, Wheel Press Recording.
Ashton Valve Co.

Gaskets.
Westinghouse Air Brake Co.

Gasoline.
Ethyl Gasoline Corp.

Gear Blanks, Rolled Steel.
Edgewater Steel Co.
Standard Steel Works Co.

Gears and Pinions.
American Steel Foundries.
Westinghouse Elec. & Mfg. Co.

Gears, Silent.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Gears, Valve — (See Valve Gears).

Generators, Acetylene.
Oxweld Railroad Service Co.

Generators, Car Lighting.
Safety Car Heating & Lighting Co.

Generators, Electric.
Fairbanks-Morse & Co.
General Electric Co.
Graybar Electric Co.
Sunbeam Electric Mfg. Co.
Westinghouse Elec. & Mfg. Co.

Goggles, Welding.
Oxweld Railroad Service Co., The.
Sunbeam Electric Mfg. Co.

Graders, Elevating.
Western Wheeled Scraper Co.

Graphite Penetrating Oil.
Alemite Mfg. Corp.

Grapples, Wood.
Industrial Brownhoist Corp.

Grate Bars.
Q & C Co., The.

Grate Shakers, Automatic.
Franklin Railway Supply Co., Inc.

Grates.
Firebar Corp.

Greases.
Alemite Mfg. Corp.

Grease Forming Machines.
Franklin Railway Supply Co., Inc.

Grey Iron.
American Brake Shoe & Foundry Co.

Grinding Machines.
Sellers & Co., Inc., Wm.

Grinding Machines, Portable.
Ingersoll-Rand Co.

Guard Rails, Creosoted Wood
International Creosoting & Construction Co.

Guard Rails, Foot Guard.
Q & C Co., The.

Guard Rails (One Piece).
Bethlehem Steel Company.
Ramapo Ajax Corp.

Guard Switch Point.
Q & C Co.. The.

Guards, Cattle.
American Bridge Co.

Guards, Dust.
Gould Coupler Co., The
Symington Co., The.

Hair Felt.
Johns-Manville Corp.

Hammers, Pneumatic.
Ingersoll-Rand Co.

Hammers, Riveting.
Ingersoll-Rand Co.

Hammers, Steam.
Industrial Brownhoist Corp.
Sellers & Co.. Inc.. Wm.

Hand Brakes—(See Brakes. Hand).

Hangers, Ball Bearing.
S. K. F. Industries, Inc.

Hand Rails & Fittings.
Aluminum Co. of America.

Hangers, Bottom Rod Safety.
Chicago Railway Equipment Co.

Hangers, Car Door — (See Fixtures, Car Door).

Headlight Repair Parts, Electric.
Electric Service Supplies Co.
Pyle-National Co.
Sunbeam Electric Mfg. Co.

Headlights, Electric.
General Electric Co.
Sunbeam Electric Mfg. Co.
Westinghouse Electric & Mfg. Co.

Headlights, Reflectors & Cases.
Pyle-National Co.
Sunbeam Electric Mfg. Co.

Heaters, Electric.
Westinghouse Electric & Mfg. Co.

Heaters, Electric Rivet.
American Hoist & Derrick Co.

Heaters, Feedwater.
Graver Corp.

Heaters, Feedwater Locomotive.
Coffin Co., Jr., The J. S.
Superheater Company, The.
Worthington Pump & Machinery Corp.

Heaters, Feed Water, Stationary.
Brill Co., The J. G.
Worthington Pump & Machinery Corp.

Heating & Ventilating Apparatus.
Vapor Car Heating Co., Inc.
Westinghouse, Electric & Mfg. Co.

Heating Equipment, Car.
Safety Car Htg. & Ltg. Co.
Vapor Car Heating Co., Inc.
Wine Railway Appliance Co.

Heating Systems, Car (Electric and Steam).
Safety Car Htg. & Ltg. Co.
Vapor Car Heating Co., Inc.
Wine Railway Appliance Co.

High Temperature Cements.
Carey & Co., Philip, The.

Highway Crossing Protection Devices.
American Bridge Co.
Franklin Railway Supply Co., Inc.
Railroad Supply Co.

Hoists, Air.
Whiting Corporation.

Hoists, Locomotive.
Whiting Corporation.

Hoists, Car, Coach.
Whiting Corporation.

Hoists, Chain.
Milwaukee Electric Crane & Hoist Corp.
Ryerson & Son, Jos. T.

Hoists, Electric.
American Hoist & Derrick Co.
Milwaukee Electric Crane & Hoist Corp.

Hoists, Pneumatic.
Ingersoll-Rand Co.

Hoists, Portable Car.
Whiting Corporation.

Hoists, Second-Hand.
Hyman-Michaels Co.

Hoisting Machinery.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.
Orton Crane & Shovel Co.
Milwaukee Electric Crane & Hoist Corp.

Hooks, Wrecking.
National Malleable & Steel Castings Co.

Horns, Pneuphonic.
Westinghouse Air Brake Co.

Hose, Air, Steam, Etc.
Ingersoll-Rand Co.
Westinghouse Air Brake Co.
Worthington Pump & Machinery Corp.

Hose, Oxy-Acetylene.
Oxweld Railroad Service Co., The.

Hose, Tender.
Prime Manufacturing Co., The.
Westinghouse Air Brake Co.

Ice Cutters.
Jordan Co., O. F.

Incandescent Lamps.
General Electric Supply Corp.

Indicators, Speed & Cut-off.
Valve Pilot Co.

Ingots.
Birdsboro Steel Foundry & Mach. Co.
Carnegie Steel Co.
Edgewater Steel Co.
Illinois Steel Co.
Interstate Iron & Steel Co.
McConway & Torley Co.
Standard Steel Works Co.

Injectors, Exhaust Steam.
Sellers & Co., Inc., Wm.
Superheater Co., The.

Inspection of Material and Equipment—(See Engineers, Inspection).

Insulated Wire.
General Cable Corp.
General Electric Supply Corp

Insulation, Car.
Lehon Co., The.

Insulation, Car Bldg.
Johns-Manville Corp.
Tuco Products Corp.
Union Asbestos & Rubber Co.

Insulation, Car Roofing, Exhaust.
Carey & Co., Philip, The.

Insulation, Electrical.
Carey & Co., Philip, The.
General Cable Corp.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Insulation, Exhaust & Heater Pipe.
Johns-Manville Corp.
Tuco Products Corp.
Union Asbestos & Rubber Co.

Insulation, Heat.
Carey & Co., Philip, The.
Miner, W. H.

Insulation Tape.
General Electric Supply Corp.

Insulators, Electrical, Porcelain.
Graybar Electric Co.
Westinghouse Elec. & Mfg. Co.

Interlocking Plant Equipment.
General Railway Signal Co.
Union Switch & Signal Co.

Iron Chain.
Falls Hollow Staybolt Co.
Lockhart Iron & Steel Co.

Iron, Charcoal.
Bethlehem Steel Co.
Ewald Iron Co.
Falls Hollow Staybolt Co.
Lockhart Iron & Steel Co.

Iron, Engine Bolt.
Lockhart Iron & Steel Co.

Iron, Forging Billets.
Lockhart Iron & Steel Co.

Iron, Hollow Staybolt.
Falls Hollow Staybolt Co.
Ryerson & Son, Joseph T.

Iron, Hollow Staybolt Bars.
Bethlehem Steel Co.
Falls Hollow Staybolt Co.
Ryerson & Son, Joseph T.

Iron, Pig.
Bethlehem Steel Co.

Iron, Refined.
Ewald Iron Co.
Falls Hollow Staybolt Co.
Lockhart Iron & Steel Co.
Reading Iron Co.
Ryerson & Son, Joseph T.

Iron, Staybolt — (See also Staybolts).
Ewald Iron Co.
Falls Hollow Staybolt Co.
Interstate Iron & Steel Co.
Lockhart Iron & Steel Co
Reading Iron Co.
Ryerson & Son, Jos. T.

Jacks, Smoke.
Johns-Manville Corp.

Jacks, Screw Electric—Locomotive & Car Lighting.
Whiting Corporation.

Joints, Air Reservoir.
Barco Mfg. Co.
Franklin Railway Supply Co., Inc.

Joints, Blow Off Line (Roundhouse).
Barco Mfg. Co.
Franklin Railway Supply Co., Inc.

Joints, Coach and Coach Yard.
Barco Mfg. Co.
Franklin Railway Supply Co., Inc.

Joints, Flexible.
Franklin Railway Supply Co., Inc.
Vapor Car Heating Co., Inc.

Joints, Flexible Ball.
Barco Mfg. Co.

Joints, Rail.
American Steel Foundries.
Carnegie Steel Co.
Illinois Steel Co.
Q & C Co., The.
Rail Joint Co.
Union Switch & Signal Co.

Joints, Steam, Air & Liquid.
Barco Mfg. Co.
Franklin Railway Supply Co., Inc.
Vapor Car Heating Co., Inc.

Joints, Swing.
Barco Mfg. Co.
Vapor Car Heating Co., Inc.

Journal Boxes and Lids.
Allegheny Steel Co.
American Steel Foundries.
Brill Co., The J. G.
Gould Coupler Co., The.
Hunt-Spiller Mfg. Corp.
National Malleable & Steel Castings Co.
Pullman Car & Mfg. Corp.
Railway Steel Spring Co.
Symington Co., The.
Union Spring & Mfg. Co.

Journal Oilers, Car & Locomotive.
Ardco Mfg. Co.

Keys, Brake Shoe.
Bradford Corporation.
Mt. Vernon Car Mfg. Co.
Steel Car Forge Co.
Union Spring & Mfg. Co.

Knuckles Emergency.
Q & C Co., The.

Laboratories, Testing.
Hunt Co., Robert W.
Pittsburgh Testing Laboratory.

Lacquers.
General Electric Supply Corp.
Sherwin-Williams Co.

Ladders, Steel Car.
Wine Railway Appliance Co.

Lagging, Locomotive.
Carey & Co., Philip, The.
Johns-Manville Corp.

Lamps, Incandescent.
General Electric Co.
Graybar Electric Co.
Westinghouse Elec. & Mfg. Co.

Lamps, Inspector's.
Oxweld Railroad Service Co., The.

Lath, Metal.
American Rolling Mill Co., The.
Truscon Steel Co.

Lathes, Axle.
Sellers & Co., Inc., Wm.

Lathes, Engine.
Ryerson & Son, Joseph T.

Lathes, Wheel.
Sellers & Co., Inc., Wm.

Lead, White.
National Lead Co.

Lighting Equipment, Car.
Electric Storage Battery Co.
Safety Car Htg. & Ltg. Co.

Lighting Fixtures and Systems.
General Electric Supply Corp.
Graybar Electric Co.
Pyle-National Co.
Safety Car Htg. & Ltg. Co.

Lighting Plants, Gas, Electric
Sunbeam Electric Mfg. Co.

Lightning Arresters.
General Electric Supply Corp.

Line Material.
Graybar Electric Co.
Westinghouse Elec. & Mfg. Co.

Lock Nuts—(See Nut Locks).

Locomotive Water Conditioners.
Bird-Archer Co., The.

Locomotives, Contractors.
American Locomotive Co.
Baldwin Locomotive Works.
Lima Locomotive Works.

Locomotives, Electric.
American Locomotive Co.
Baldwin Locomotive Works.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Locomotives, Gasoline.
Baldwin Locomotive Works.

Locomotives, Gas-Electric.
Electro Motive Co.

Locomotives, Geared.
Lima Locomotive Works.

Locomotives, Industrial.
American Locomotive Co.
Baldwin Locomotive Works.
General Electric Co.
Lima Locomotive Works.
Westinghouse Elec. & Mfg. Co.

Locomotives, Mine.
American Locomotive Co.
Baldwin Locomotive Works.
General Electric Co.
Lima Locomotive Works.
Westinghouse Elec. & Mfg. Co.

Locomotives, Oil, Engine, Electric Driven.
American Locomotive Co.
Baldwin Locomotive Works.
General Electric Co.
Ingersoll-Rand Co.
Westinghouse Elec. & Mfg. Co.

Locomotives, Rebuilt.
American Locomotive Co.

Locomotives, Repair Parts.
American Locomotive Co.
Baldwin Locomotive Works.
Lima Locomotive Works.

Locomotives, Second-Hand.
Hyman-Michaels Co.

Locomotives, Steam.
American Locomotive Co.
Baldwin Locomotive Works.
Lima Locomotive Works.

Locomotive Stokers.
Standard Stoker Co.

Locomotive Valve Pilot.
Valve Pilot Co.

Lubricants.
Alemite Mfg. Corp.

Lubrication Equipment.
Alemite Mfg. Corp.

Lubrication Systems.
Alemite Mfg. Corp.

Lubricators, Driving Box.
Franklin Railway Supply Co., Inc.

Lubricators, Piston Rod.
Q & C Co., The.

Lumber.
Central Coal & Coke Co.
Curtin-Howe Corp.
West Coast Lumber Trade Extension Bureau.

Lumber, Asbestos.
Carey & Co., Philip, The.
Johns-Manville Corp.

Lumber, Creosote Treated.
International Creosoting & Construction Co.

Lumber, Creosoted.
American Creosoting Co.
Central Coal & Coke Co.
Century Wood Preserving Co.
Industrial Lumber & Creosoting Co.
International Creosoting & Construction Co.
Jennison-Wright Co.
National Lumber & Creosoting Co.

Machinery, Hydraulic.
Birdsboro Steel Foundry & Mach. Co.

Machine Screws, Monel Metal
International Nickel Co., The.

Magnets, Lifting.
Industrial Brownhoist Corp.
Electro Metallurgical Sales Corp.

Mechanical Draft Apparatus—(See Heating and Vent. App.)

Mechanical Stokers.
Standard Stoker Co.

Melters, Snow, Electric.
Q & C Co., The.

Metallic Flexible Conduit.
General Electric Supply Corp.

Meters, Water & Oil.
Worthington Pump & Machinery Corp.

Milling Machines, Planer Type.
Sellers & Co., Inc., Wm.

Milling Machines, Plain and Universal.
Ryerson & Son, Joseph T.

Mohair Upholstery Velvets.
Chase & Co., L. C.
Massachusetts Mohair Plush Co.

Molybdenum Metal.
Vanadium Corp. of America.

Monel Metal, Rods, Sheets, Tubes, Wire, etc.
International Nickel Co., The.

Motors, Electric.
Fairbanks-Morse & Co.
General Electric Co.
Graybar Electric Co.
Westinghouse Elec. & Mfg. Co.

Motors & Generators.
Fairbanks-Morse & Co.

Moulding.
Aluminum Co. of America.

Movers, Locomotive.
Whiting Corporation.

Multiple V Belt Drives
Worthington Pump and chinery Corp.

Nails.
American Steel & Wire Co.
Reading Iron Co.
Ryerson & Son, Joseph T.

Nipples, Air Hose.
Prime Manufacturing Co.

Nozzles, Exhaust.
Franklin Railway Supply Co., Inc.

Nozzles, Oxy-Acetylene Cutting.
Oxweld Railroad Service Co., The.

Nuts—(See Bolts and Nuts).

Nut Locks.
Dardelet Threadlock Corp.
Grip Nut Co.
National Lock Washer Co.
Reliance Mfg. Co.

Nuts, Tank Hose.
Prime Manufacturing Co., The.

Office Appliances.
Remington-Rand Business Service

Oil-Electric Locomotives.
American Locomotive Co.
General Electric Co.
Ingersoll-Rand Co.
Westinghouse Elec. & Mfg. Co.

Oil Filtering & Storage Systems.
Graver Corp.

Oil, Linseed.
National Lead Co.

Oil Plugs, Steam Chest.
Franklin Railway Supply Co., Inc.

Oxy-Acetylene Apparatus.
Oxweld Railroad Service Co., The.

Oxygen.
Oxweld Railroad Service Co., The.

Packing, Air Pump.
Johns-Manville Corp.
Pilot Packing Co.
Union Asbestos & Rubber Co.
Westinghouse Air Brake Co.

Packing, Cylinder and Valve Ring.
Hunt-Spiller Mfg. Corp.
Westinghouse Air Brake Co.

Jacking, Locomotive.
Johns-Manville Corp.

Packing, Locomotive Cab Cock.
Johns-Manville Corp.
Union Asbestos & Rubber Co.

Packing, Ring Boiler.
Union Asbestos & Rubber Co.

Packing, Semi-Metallic.
Pilot Packing Co.
Central Alloy Steel Corp.

Packing, Sheet.
Johns-Manville Corp.
Union Asbestos & Rubber Co.

Packing, Soft.
Carey & Co., Philip, The.
Johns-Manville Corp.
Pilot Packing Co.
Union Asbestos & Rubber Co.

Packing, Throttle.
Johns-Manville Corp.
Union Asbestos & Rubber Co.

Packing.
Westinghouse Air Brake Co.

Paint Burners, Acetylene.
Oxweld Railroad Service Co., The.

Paint, Metal Protective.
National Lead Co.
Sherwin-Williams Co.

Paint, Powder.
Aluminum Co. of America.

Paints.
Lehon Co., The.
National Lead Co.
Sherwin-Williams Co.

Paper, Carbon.
Remington-Rand Business Service

Paper, Sheathing.
Carey & Co., Philip, The.
Lehon Co., The.

Pavement Breakers.
Ingersoll-Rand Co.

Pickling Equipment, Monel Metal.
International Nickel Co., The.

Pile Drivers.
American Hoist & Derrick Co.
Industrial Brownhoist Co.

Piling, Creosoted.
American Creosoting Co.
Century Wood Preserving Co.
International Creosoting & Construction Co.
Jennison-Wright Co.
National Lumber & Creosoting Co.

Piling, Sheet Steel.
American Bridge Co.
Carnegie Steel Co.

Pilot Beams, Cast Steel.
General Steel Castings Corp.— (Commonwealth Division).
Gould Coupler Co., The

Pilots, Cast Steel.
General Steel Castings Corp. (Commonwealth Division).
Locomotive Finished Material Co.

Pins, Airbrake.
Steel Car Forge Company.

Pins, Center.
Miner, W. H.

Pins, Coupler Knuckle.
McConway & Torley Co.
National Malleable & Steel Castings Co.

Pins, Crank.
American Locomotive Co
Baldwin Locomotive Works
Miner, Inc., W. H.
Standard Steel Works Co
Union Asbestos & Rubber Corp.

Pipe Coverings.
Carey & Co., Philip, The.
Johns-Manville Corp.

Pipe Fittings—(See Fittings, Pipe).

Pipe, Metal Culvert.
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Republic Steel Corp.

Pipe, Steel Signal.
National Tube Co.

Pipe, Wrought Iron.
Byers Co., A. M.
Reading Iron Co.

Pits, Drop Pit Tables.
Whiting Corporation.

Planers, Plate.
Ryerson & Son, Jos. T.
Sellers & Co., Inc., Wm

Plates.
Steel Car Forge Co.

Plates, Follower.
Steel Car Forge Co.

Plates, Boiler, Firebox—(See Steel Firebox).

Plates, Center—(See Bearings, Center).

Plates, Iron & Steel.
American Rolling Mill Co., The.
Carnegie Steel Co.
Illinois Steel Co.
Inland Steel Co.
Interstate Iron & Steel Co.
Ryerson & Son, Joseph T.

Plates, Tie.
Illinois Steel Co.
Inland Steel Company.
Interstate Iron & Steel Co
Railroad Supply Co.
Tennessee Coal, Iron & Railroad Co.

Plates, Tin and Terne.
American Sheet & Tin Plate Co.

Platforms, Car.
General Steel Castings Corp. — (Commonwealth Division).
Gould Coupler Co., The.
Standard Coupler Co.

Plows, Railroad and Grading.
Western Wheeled Scraper Co.

Plows, Snow.
American Locomotive Co.
Brill Co., The J. G.
Clark Tructractor Co.
Jordan Co., O. F.
Q & C Co., The.

Plugs, Arch Tube.
Prime Mfg. Co., The.

Plugs, Oil & Grease Cup.
Prime Mfg. Co., The.

Plugs, Washout.
Prime Mfg. Co., The.

Plush, Mohair.
Chase & Co., L. C.
Massachusetts Mohair Plush Co.

Pneumatic Tools.
Ingersoll-Rand Co.

Poles.
Central Coal & Coke Co.
General Electric Supply Corp.
Graybar Electric Co.

Poles, Creosoted.
American Creosoting Co.
Central Coal & Coke Co.
Century Wood Preserving Co.
Graybar Electric Co.
International Creosoting & Construction Co.
National Lumber & Creosoting Co.

Poles, Signal.
General Railway Signal Co.
International Creosoting & Construction Co.
Union Switch & Signal Co.
Whiting Corporation.

Poles, Steel Tubular.
Graybar Electric Co.
National Tube Co.

Poles, Zinc Metal Arsenite Treatment.
Curtin-Howe Corp.

Posts, Fence.
Curtin-Howe Corp.
International Creosoting & Construction Co.
National Lumber & Creosoting Co.

Posts, Fence, Creosoted.
Inland Steel Co.
International Creosoting & Construction Co.
National Lumber & Creosoting Co.

Posts, Steel Fence.
American Steel & Wire Co.
Q & C Co., The.

Powder, Blasting—(See Explosives).

Powdered Coal Equipment.
Muhlfeld, John E.

Power Transmission Supplies
Sellers & Co., Inc., Wm.

Power Plants.
General Electric Co.
Muhlfeld, John E.
United Engineers & Constructors, Inc.
Westinghouse Elec. & Mfg. Co.

Power Shovels.
American Hoist & Derrick Co.
Northwest Engineering Co.

Power Transmission Supplies
Sellers & Co., Inc., Wm.
Wrought Iron Co. of America.

Preservatives, Wood.
Century Wood Preserving Co.
Jennison-Wright Co.

Presses, Flanging Hydraulic
Birdsboro Steel Foundry & Mach. Co.

Presses, Hydraulic.
Birdsboro Steel Foundry & Mach Co.

Presses, Wheel.
Birdsboro Steel Foundry & Mach Co.
Sellers & Co., Inc., Wm

Pulverizers, Coal — (See Crushers, Coal).

Pullers, Car Electric.
Whiting Corporation.

Pullshovels.
American Hoist & Derrick Co.
Whiting Corporation.

Pulverized Coal Burning Systems.
Whiting Corporation.

Pumping Stations.
Fairbanks-Morse & Co.

Pump Liners, Monel Metal.
International Nickel Co. The.

Pump Rods, Monel Metal.
International Nickel Co. The.

Pump Shafts, Monel Metal
International Nickel Co. The.

Pumps, Hydraulic.
Ingersoll-Rand Co.
Worthington Pump & Machinery Corp.

Pumps & Pumping Machinery.
Fairbanks-Morse & Co.
Ingersoll-Rand Co.
Westinghouse Air Brake Co
Worthington Pump & Machinery Corp.

Pumps, Vacuum.
Ingersoll-Rand Co.
Worthington Pump & Machinery Corp.

Punching and Shearing Machines.
Ryerson & Son, Joseph T

Pushers, Coal.
Standard Stoker Co.

Pyrometers, Superheated Steam.
Superheater Co., The.

Rail Anchors.
Bethlehem Steel Co.
P. & M. Co., The.

Rail-Bonds.
American Steel & Wire Co.
General Cable Corp.
General Electric Co.
General Railway Signal Co.
Graybar Electric Co.
Railroad Supply Co.
Union Switch & Signal Co
Westinghouse Elec. & Mfg. Co.

Rail Braces — (See Braces, Rail).

Rail Cranes.
American Hoist & Derrick Co.

Rail Reclamation Equipment.
Ryerson & Son, Joseph T.

Railroad Shops.
United Engineers & Constructors, Inc.

Rail Splice Plates — (See Joints, Rail).

Railroad Structures — (See Engineers and Contractors; also Building).

Rails.
Bethlehem Steel Co.
Carnegie Steel Co.
Hyman-Michaels Co.
Illinois Steel Co.
Inland Steel Co.
Tennessee Coal, Iron & Railroad Co.
Thomson Rail Corp.

Rails, Relaying.
Hyman-Michaels Co.

Railway Signals.
General Electric Supply Corp.

Rattan.
Hale-Kilburn Co.
Heywood-Wakefield Co.

Receivers, Air.
Ingersoll-Rand Co.
Westinghouse Air Brake Co.

Recorders, Speed & Cut-off.
Valve Pilot Co.

Rectifiers for Signal Work.
General Electric Co.
Railroad Supply Co.
Union Switch & Signal Co.

Reducing Valves.
Vapor Car Heating Co., Inc.

Reflectors, Headlignt.
Sunbeam Electric Mfg. Co.

Refrigerators.
American Radiator Co.
Wine Railway Appliance Co.

Regulators, Oxy-Acetylene.
Oxweld Railroad Service Co., The.

Relays.
General Railway Signal Co.
Railroad Supply Co.
Union Switch & Signal Co.
Westinghouse Elec. & Mfg. Co.

Removers, Paint & Varnish.
Oakite Products, Inc.

Repair Parts, Stoker.
Standard Stoker Co.
Q & C Company, The.

Retorts Creosoting.
Graver Corp.

Reverse Gear, Power.
Barco Mfg. Co.
Franklin Railway Supply Co., Inc.

Rivet Cutters.
Ingersoll-Rand Co.
Interstate Iron & Steel Co.

Riveters, Hydraulic.
Birdsboro Steel Foundry & Mach. Co.

Riveting Machines.
Ingersoll-Rand Co.

Rivets.
Inland Steel Co.
Neely Nut & Bolt Co.
Ryerson & Son, Joseph T.
Pressed Steel Car Co.
Russell, Burdsall & Ward Bolt and Nut Co.

Rods.
Neely Nut & Bolt Co.

Rolled Steel.
Carnegie Steel Co.

Roller Bearings (See Bearings, Roller).

Rolls, Bending & Straightening.
Birdsboro Steel Foundry & Mach. Co.

Roof Decks, Steel.
Mahon Co., R. C.

Roof Slabs, Concrete.
Federal American Cement Tile Co.

Roofing, Asbestos.
Carey & Co., Philip, The.
Lehon Co., The.
Johns-Manville Corp.

Roofing, Buildings.
American Rolling Mill Co.
Lehon Co., The.
Johns-Manville Corp.

Roofing, Car.
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Carey & Co., Philip, The.
Lehon Co., The.
Hutchins Car Rfg. Co.
Johns-Manville Corp.
Tuco Products Corp.
Union Metal Products Co

Roofing, Corrugated.
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Johns-Manville Corp.

Roofing, Tile.
Federal American Cement Tile Co.

Roofing, Tile, Cement.
Federal American Cement Tile Co.

Roofing, Tin.
American Sheet & Tin Plate Co.

Rope, Wire — (See Wire Rope).

Rust Preventatives.
Dearborn Chemical Co.
Oakite Products, Inc.

Safe Ends.
National Tube Co.

Sand Drying Plants.
Roberts & Schaefer Co.

Sand Plants.
Railway Engineering Equipment Co.

Sanitary Products.
West Disinfecting Co.

Sash Balances.
Tuco Products Co.

Saws, Circular Metal.
Ryerson & Son, Joseph T.

Saws, High Speed, Friction.
Ryerson & Son, Joseph T.

Saws, Portable Rail.
Industrial Brownhoist Corp
Q & C Co., The.

Scales.
Fairbanks-Morse & Co.

Scrapers, Wheeled and Drag.
Western Wheeled Scraper Co.

Screens, Passenger Car.
Tuco Products Corp.

Seats, Car.
Brill Co., The J. G.
Hale-Kilburn Co.
Heywood-Wakefield Co.
St. Louis Car Co.

Seats, Coach.
Brill Co., The J. G.

Shafting.
Falls Hollow Staybolt Co.
Ryerson & Son, Joseph T.
Sellers & Co., Inc., Wm.
Standard Steel Works Co.

Shapers.
Ryerson & Son, Joseph T.

Shapes, Pressed Steel.
Pressed Steel Car Co.
Sellers & Co., Inc., Wm.

Shapes, Structural.
Bethlehem Steel Co.
Carnegie Steel Co.
Illinois Steel Co.
Inland Steel Co.
Ryerson & Son, Joseph T.

Sheds, Train.
American Bridge Co.
Inland Steel Co.

Sheets, Black and Galvanized.
Allegheny Steel Co.
American Rolling Mill Co., The.
American Sheet & Tin Plate Co.
Inland Steel Co.
Republic Steel Corp.
Ryerson & Son, Joseph T.

Sheets, Blue Annealed.
Allegheny Steel Co.

Sheets, Car & Building.
American Rolling Mill Co.

Sheets, Corrugated.
American Rolling Mill Co., The.
American Sheet & Tin Plate Co.
Carnegie Steel Co.
Johns-Manville Corp.
Ryerson & Son, Joseph T.

Sheets, Corrugated and Plain.
Inland Steel Co.
Ryerson & Son, Joseph T.

Sheets, Electrical.
American Rolling Mill Co., The.
American Sheet & Tin Plate Co.
Republic Steel Corp.
Ryerson & Son, Joseph T.

Sheets, Iron & Steel.
American Rolling Mill Co.
Bethlehem Steel Co.

Sheets, Locomotive Jacket.
American Rolling Mill Co., The.
American Sheet & Tin Plate Co.
Inland Steel Co.

Sheets, Polished or Planished. Iron.
American Rolling Mill Co., The.
American Sheet & Tin Plate Co.

Sheets, Steel.
American Rolling Mill Co., The.
Inland Steel Co.
Ryerson & Son, Joseph T.

Sherardising Plants.
General Electric Co.

Shop Calling Systems—(See Systems, Communication)

Shops, Railroad—(See Buildings, Iron, Steel and Steel Concrete).

Shovels & Draglines.
American Hoist & Derrick Co.
Industrial Brownhoist Corp.

Shovels, Gasoline & Electric.
American Hoist & Derrick Co.

Shovels, Steam, Gasoline & Electric.
American Hoist & Derrick Co.
Clark Tructractor Co.
Orton Crane & Shovel Co.

Siding, Bldg., Car, Corrugated & Plain.
Kinnear Mfg. Co.
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Inland Steel Co.

Siding, Corrugated & Plain.
Carey & Co., Philip, The.
Johns-Manville Corp.

Siding, Iron & Steel.
American Rolling Mill Co.

Signal Accessories.
Electric Storage Battery Co.
General Electric Co.
General Railway Signal Co.
Graybar Electric Co.
Railroad Supply Co.
Union Switch & Signal Co.
Westinghouse Elec. & Mfg. Co.

Signals, Automatic Cab.
General Railway Signal Co.
Union Switch & Signal Co.

Signal Blades.
General Railway Signal Co.
Union Switch & Signal Co.

Signals, Crossing.
Union Switch & Signal Co.

Signals, Crossing Protection.
General Railway Signal Co.
Railroad Supply Co.

Signals, Railway.
General Electric Co.
Union Switch & Signal Co.

Signs, Highway Crossing.
Railroad Supply Co.

Silico Manganese.
Vanadium Corp. of America

Silicon.
Electro Metallurgical Sales Corp.

Slabs, Concrete Floor.
American Cement Tile Mfg. Co.
Federal Cement Tile Co.

Slag, Blast Furnace.
Carnegie Steel Co.

Slotting Machines.
Sellers & Co., Inc., Wm

Slotting Machines, Locomotive Cylinder.
American Steel & Wire Co.

Sludge Removers.
Bird-Archer Co., The.

Soap, Liquid.
West Disinfecting Co.

Snow Plows.
Jordan Co., O. F.

Solder.
National Bearing Metals Corp.
Westinghouse Elec. & Mfg. Co.

Special Machinery.
Whiting Corporation.

Speed Indicators & Recorders.
Valve Pilot Corp.

Spelter—(See Zinc).

Spikes.
American Steel & Wire Co.
Bethlehem Steel Co.
Illinois Steel Co.
Inland Steel Co.
Ryerson & Son, Joseph T.

Splice Bars, Angle.
Carnegie Steel Co.
Illinois Steel Co.
Inland Steel Co.

Spreaders, Ballast.
Jordan Co., O. F.

Spring, Plates or Seats.
Allegheny Steel Co.
National Malleable & Steel Castings Co.
Union Spring & Mfg. Co.

Springs.
American Steel Foundries Co.
American Steel & Wire Co.
Railway Steel Spring Co.
Standard Steel Works Co.
Union Spring & Mfg. Co.
Union Switch & Signal Co.

Springs, Shop Equipment.
Ryerson & Son, Joseph T.

Springs, Vanadium Steel.
Union Spring & Mfg. Co.

Stacks, Steel.
American Bridge Co.
Graver Corp.

Stands, Switch & Target.
Q & C Co., The.

Staybolts.
American Locomotive Co.
Ewald Iron Co.
Falls Hollow Staybolt Co.
Flannery Bolt Co.
Ryerson & Son, Joseph T.

Staybolts, Hollow.
Falls Hollow Staybolt Co
Ryerson & Son, Joseph T.

Steam Chests.
Franklin Railway Supply Co., Inc.

Steam Enclosures, Corrugated Iron.
Republic Steel Corp.

Steam Shovels.
American Hoist & Derrick Co.
Orton Crane & Shovel Co.

Steel Alloy.
Illinois Steel Co.
Ryerson & Son, Joseph T.
Republic Steel Corp.
Standard Steel Works Co.

Steel, Firebox.
Carnegie Steel Co.
Illinois Steel Co.

Steel, Heat Treated.
Interstate Iron & Steel Co.

Steel & Iron, Stainless.
Allegheny Steel Co.

Steel, Open Hearth.
Carnegie Steel Co.
Illinois Steel Co.

Steel Plate Construction.
Graver Corp.

Steel, Pressed Specialties.
Hale-Kilburn Co.

Steel, Structural.
American Bridge Co.
Carnegie Steel Co.
Graver Corp.
Illinois Steel Co.
Inland Steel Co.
Ryerson & Son, Joseph T.

Steel, Tool.
Illinois Steel Co.
Midvale Co., The.
Q & C Co., The.
Ryerson & Son, Joseph T.

Step Joints.
Q & C Co., The
Rail Joint Co.

Steps, Car—(See Car Steps Safety).

Stokers, Industrial.
Whiting Corporation.

Stokers, Locomotive.
Standard Stoker Co.

Stokers, Mechanical.
Westinghouse Elec. & Mfg Co.

Stoker Repair Parts.
Standard Stoker Co.

Storm Sewers, Corrugated Iron.
Armco Culvert Mfrs. Assoc.
Republic Steel Corp.

Strainer, Air.
Westinghouse Air Brake Co

Strainers, Tank Hose.
Prime Mfg. Co., The.

Stream Enclosures, Corrugated Iron.
Armco Culvert Mfrs. Assoc

Stringers, Bridge.
Central Coal & Coke Co.
Century Wood Preserving Co.
International Creosoting & Construction Co.

Stringers, Bridge, Creosoted.
Century Wood Preserving Co.
National Lumber & Creosoting Co.

Structural Shapes, Rolled Shapes.
Carnegie Steel Co.

Superheaters.
Superheater Co., The.

Supports, Bottom Rod Safety.
Chicago Railway Equipment Co.

Switch Boards.
Graybar Electric Co.
Johns-Manville Corp.
Westinghouse Elec. & Mfg. Co.

Switch Machines.
General Railway Signal Co.

Switch Movements.
Union Switch & Signal Co.

Switch Ties.
International Creosoting & Construction Co.

Switch Ties, Creosoted.
International Creosoting & Construction Co.
National Lumber & Creosoting Co.

Switches, Electric.
Electric Service Supplies Co.
General Electric Co.
Graybar Electric Co.
Westinghouse Elec. & Mfg. Co.

Switches & Switch Stands.
Ramapo Ajax Corp.

Syphons, Corrugated Iron.
Armco Culvert Mfrs. Association.
Republic Steel Corp.

Syphons, Locomotive.
Locomotive Firebox Co.

Syphons, Locomotive, Boilers
Locomotive Firebox Co.

Tables, Drop Pit Electric.
Whiting Corporation.

Tables, Transfer.
Whiting Corporation.

Tables, Welding.
Oxweld Railroad Service Co., The.

Tables, Welding.
Oxweld Railroad Service Co., The.

Tamping Machines, Tie.
Ingersoll-Rand Co.

Tamping Outfits, Tie.
Ingersoll-Rand Co.

Tanks, Acetylene, Gas.
Oxweld Railroad Service Co., The.

Tanks, Air, Gas, Oil and Water.
Graver Corp.

Tanks, Water.
American Bridge Co.
American Locomotive Co.
National Tube Co.
Pressed Steel Car Co.
Westinghouse Air Brake Co

Tape, Insulation.
Johns-Manville Corp.
Okonite Co., The.
Westinghouse Elec. & Mfg. Co.

Taps, Staybolt.
Ryerson & Son, Joseph T.

Tele. & Tele. Wire.
General Cable Corp.
General Electric Supply Corp.

Terminals, Railroad.
United Engineers & Constructors, Inc.

Testers, Boiler.
Sellers & Co., Inc., Wm.

Testers, Gage.
Ashton Valve Co.

Testers, Rail.
Sperry Products, Inc.

Testers, Staybolt.
Flannery Bolt Co.

Testing Machines, Drop.
Whiting Corporation.

Thermostats.
Vapor Car Heating Co. Inc.

Throttles.
American Throttle Co.

Tie Plates.
Bethlehem Steel Co.
Illinois Steel Co.
Railroad Supply Co.

Ties, Creosoted.
International Creosoting & Construction Co.
Jennison-Wright Co.
National Lumber & Creosoting Co.

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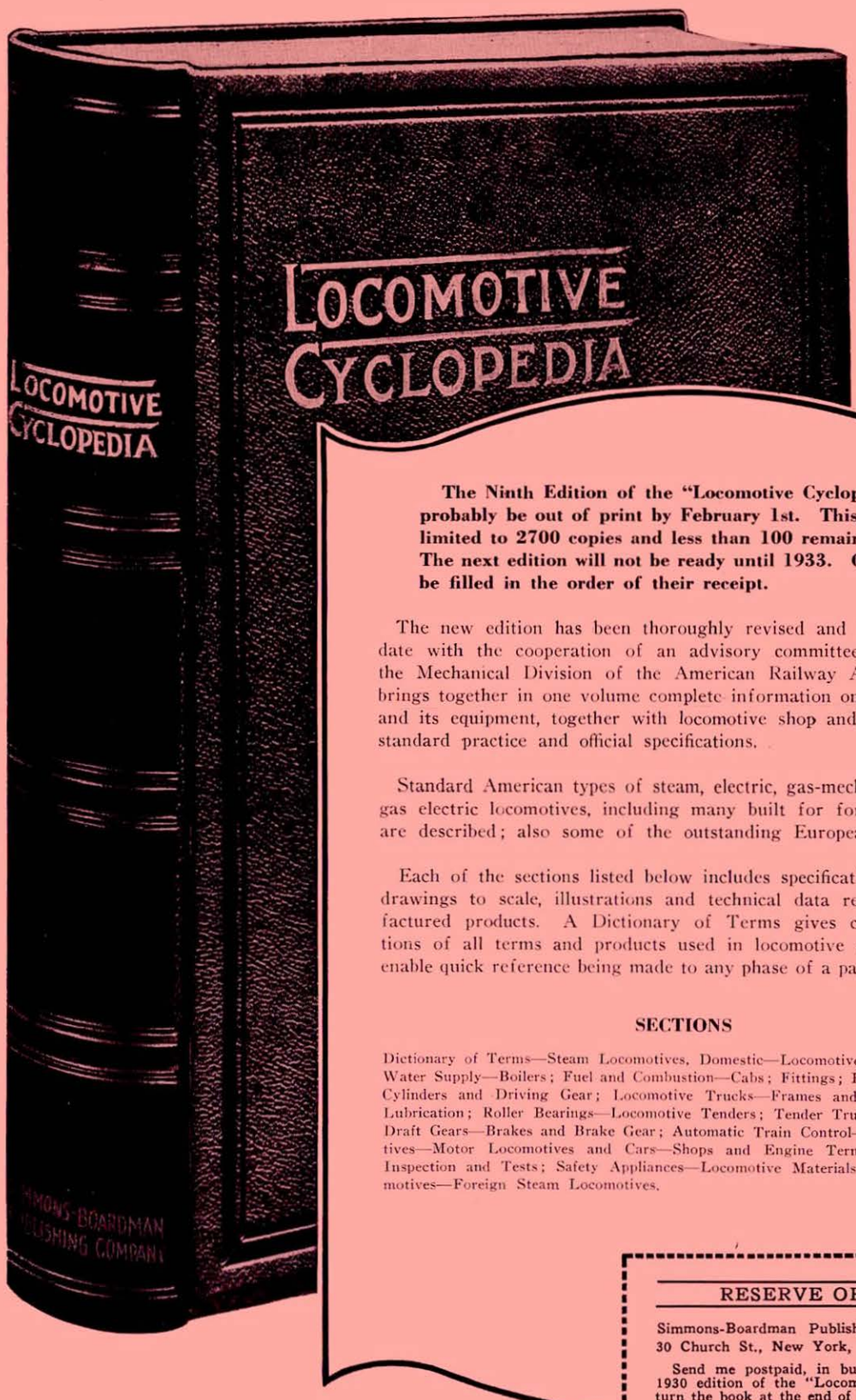

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